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New West Indian Lejeuneae

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(WITH PLATES 26–28)

Students of the Hepaticae cannot help being impressed by the remarkable development of the *Lejeuneae* in tropical regions. Usually more than half of the species in any particular locality belong to this group, and many of the species are represented by numerous individuals. The *Lejeuneae* have become adapted to a great variety of external conditions. Some are true xerophytes and are able to endure desiccation for considerable periods; others cannot exist except in the constant shade of moist forests. Some grow on rocks or on the bark of trees, others are found only on living leaves, while still others carry on their entire development within the tufts of larger bryophytes. In all probability the group is essentially modern, and the species have acquired their great diversity of form and their manifold adaptations to peculiar modes of life within comparatively recent times.

The West Indies agree with other tropical regions in showing a large preponderance of *Lejeuneae*. In a series of papers on the Hepaticae of Puerto Rico * the writer has recently had occasion to describe and figure more than fifty species in the group, many of which have a geographical range extending far beyond the limits of this particular island. In connection with the specific descriptions the genera to which the species are referred are also discussed, and in several instances it has seemed advisable to propose new genera or to emend the characters of accepted genera as given by earlier writers. In the course of this study other West

* Bull. Torrey Club 29–35. 1902–1908.

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Indian *Lejeuneae*, not yet known from Puerto Rico and apparently new, have been distinguished, and six of these are described and figured in the present paper. One local species from the Blue Mountains of Jamaica is made the type of a new genus; the others belong to genera which have been discussed in connection with the Puerto Rico flora, and the reader is therefore referred to the series noted above for an account of the generic peculiarities. The type specimens of the new species are preserved in the herbarium of the writer, at New Haven, Connecticut.

Trachylejeunea dilatata sp. nov.

Pale green, dull, scattered or forming thin depressed mats: stems 0.085 mm. in diameter, loosely adherent to the substratum, copiously and irregularly pinnate, the branches widely spreading, simple or sparingly subdivided, often with smaller leaves than the stem but not microphyllous: leaves contiguous to loosely imbricated, the lobe strongly falcate, obliquely spreading, convex, abruptly dilated from a narrow base, orbicular-obovate in general outline, 0.35–0.5 mm. long, antical margin decurrent by a single cell, straight or slightly incurved near the base, then strongly outwardly curved to apex, postical margin also outwardly curved, apex broad and rounded, rarely very bluntly pointed, margin denticulate from projecting cells except close to antical base; lobule inflated throughout, abruptly contracted in the outer part to a circular opening, ovate, 0.17 mm. long, 0.14 mm. wide, keel strongly arched, forming an angle of about 90° with postical margin of lobe, free margin curved and entire, revolute, meeting surface of lobe at about a right angle, apical tooth consisting of a slightly projecting cell, short and blunt, bearing the hyaline papilla in a slight depression on the proximal side, sinus straight or lunulate, forming with the apical tooth the greater part of the opening into the water-sac; cells of lobe averaging 15 μ at the margin and 35 × 21 μ in the middle and at the base, postical surface plane or nearly so, antical surface varying from plane to convex and conical in passing from basal and median regions toward the margin, walls thin throughout or with very minute triangular trigones; ocelli none: underleaves distant, plane, orbicular, 0.12 mm. long, bifid to about the middle with erect, acute to obtuse divisions, mostly three or four cells long and three or four cells wide at the base, sinus obtuse, margin entire or subdenticulate from projecting cells, sometimes unidentate on sides, basal region cuneate: inflorescence autoicous: ♀ inflorescence sometimes borne on a leading branch, sometimes on a more or less abbreviated branch, innovating on one, rarely on both sides,

the innovations sterile or rarely again floriferous; bracts obliquely spreading, complicate, keel sharp but not winged, lobe oblong to obovate, 0.75 mm. long, 0.45–0.55 mm. wide, margin as in the leaves, lobule ovate-lanceolate, obtuse, 0.4 mm. long, 0.17 mm. wide, margin entire or nearly so; bracteole very slightly connate on both sides, oblong, 0.4 mm. long, 0.35 mm. wide, bifid about one third with erect obtuse lobes, and an obtuse or subacute sinus, margin vaguely and irregularly crenulate from projecting cells; perianth slightly exserted, ovoid, 0.6 mm. long, 0.35 mm. wide, cuneate toward base, truncate or retuse at apex with a short beak crenulate at the mouth, slightly compressed, sharply five-keeled in upper part, each keel bearing two denticulate wings, one or rarely two to five cells wide, surface otherwise smooth or nearly so: ♂ inflorescence occupying a short branch or terminal on a more or less elongated branch, not proliferating; bracts mostly in two to fifteen pairs, loosely imbricated, much smaller than the leaves, strongly inflated, slightly and subequally bifid, the lobes rounded and crenulate at the apex, keel strongly arched, crenulate; antheridia in pairs: capsule about 0.2 mm. in diameter; spores irregular in form, about 12 μ in short diameter, greenish, minutely verruculose. (PLATE 26, FIGURES 1–13.)

On leaves of ferns. Jamaica: Mabess River, *Maxon* (*1544*), *Evans* (*311*). Dominica: Laudat Mountain, *Lloyd* (*102*). The specimens collected by the writer may be considered the type.

Except for the delicate texture of the plants and the roughness of the leaf-lobes, the present species might be placed in the genus *Crossotolejeunea*. In fact *Trachylejeunea* and *Crossotolejeunea* have so many characters in common that the line of demarcation between them is largely artificial. The roughness in *T. dilatata* is restricted to the outer or antical surface of the lobe and to the keels of the perianth, the surface of the lobule and of the perianth between the keels being smooth. Even in the lobes the basal and median regions are smooth and the roughness is sometimes confined to a very narrow border. It is not produced by a wart-like thickening of the walls as in certain other members of the genus but is due to the fact that each cell is strongly convex or conical. Usually the walls are thin throughout, but occasionally minute trigones and very slight thickenings at the apices of the conical cells may be demonstrated. The great disparity in size between the median and marginal cells is a striking feature of the plant. The abrupt dilation of the lobe, the marginal denticulations, and the

small underleaves are characters which *T. dilatata* shares with certain species of *Prionolejeunea*, but of course its five-keeled perianth would at once exclude it from this genus.

Of the three species of *Trachylejeunea* already recorded from the West Indies, *T. prionocalyx* (Gottsche) Schiffn.* is especially close to *T. dilatata*. This species is apparently endemic to Cuba. The original material was collected by Wright, but additional specimens were lately found by Underwood and Earle on El Yunque Mountain, near Baracoa. Both species show an abrupt dilation of the lobe, thin cell-walls, an absence of ocelli, an autoicous inflorescence, and subfloral innovations. In *T. prionocalyx*, however, the plants are smaller than in *T. dilatata*, the leaves rarely exceeding 0.3 mm. in length, the margins of the lobes are crenulate rather than denticulate, and the roughness is restricted to the keels of the perianth, even the leaf-lobes being smooth except for the marginal crenulations. Here again the roughness of the keels is due to projecting cells, but these are longer than in *T. dilatata*, their walls are thicker, and their extremities are rounded rather than conical; the effect produced is one of greater roughness. The male spikes in *T. prionocalyx* are short and show only two or three pairs of bracts.

The two other West Indian species of *Trachylejeunea* are *T. Aquarius* (Spruce) Evans † and *T. Spruceana* Steph.‡ The first of these was originally described from Brazilian material but is now known also from both Puerto Rico and Cuba; the second is known only from Guadeloupe, where the type specimens were collected by L'Herminier. In *T. Aquarius* the plants are more robust than in *T. dilatata*, the leaves are ocellate at the base, the leaf-cells have large and conspicuous trigones, and the roughness affects not only the lobes and lobules but also the surface of the perianth between the keels, especially in the upper part. In the perianth the roughness is due to convex and uniformly thickened cell-walls, while in the leaves there is a large median wart arising from each cell. Even the underleaves in this species sometimes show a few scattered warts along the margin. In *T. Spruceana*

* Bot. Jahrb. 23: 592. *pl. 15. f. 8–12.* 1897.

† Hep. Amaz. et And. 185. 1884. See also Evans, Bull. Torrey Club 30: 561. *pl. 22. f. 11–22.* 1903.

‡ Hedwigia 35: 138. 1896.

the trigones are also large and the underleaves are everywhere denticulate. The species is dioicous and is described from male material; in the absence of perianths its generic position cannot be regarded as definitely established.

Another species which should also be compared with *T. dilatata* is the dioicous *Lejeunea asperrima* Spruce. Unfortunately the generic position of this plant is far from settled, because the perianths are still unknown. In the original description Spruce referred it with some question to *Priono-Lejeunea*;* he afterwards transferred it to *Harpalejeunea* † and still later distributed it in his Hepaticae Spruceanae under *Trachylejeunea*. *L. asperrima* was first described from Brazilian specimens but has since been reported by its author from the island of St. Vincent. In the abrupt dilation of its leaf-lobes, in its thin cell-walls, in its lack of ocelli and in its subfloral innovations, it agrees with both *T. dilatata* and *T. prionocalyx*. The roughness, however, is more extensive, a portion of the lobule and practically the whole of the lobe being involved. The leaf-cells are thin-walled throughout, and the roughness, as in *T. dilatata*, is due to the conical projections of the cells. The species is about as large as *T. prionocalyx*.

Harpalejeunea reflexula sp. nov.

Pale or bright green, dull, scattered among other *Lejeuneae* or forming small depressed mats: stems 0.35 mm. in diameter, loosely adherent to the substratum, sparingly and irregularly pinnate, the branches widely spreading, similar to the stem: leaves loosely imbricated, the lobe obliquely spreading, strongly convex and usually reflexed or revolute at the apex, falcate, broadly ovate, 0.25 mm. long, 0.2 mm. wide, antical margin decurrent by a single cell, nearly straight near base, then strongly outwardly curved to apex, postical margin straight or slightly curved, apex gradually acuminate, usually tipped with a row of from two to four cells, margin entire or vaguely and irregularly crenulate from projecting cells; lobule ovate in outline, 0.14 mm. long, 0.1 mm. wide, abruptly contracted in outer part, otherwise strongly inflated and forming an almost spherical water-sac, keel strongly arched, forming an angle of about 90° with postical margin of lobe, free margin curved and revolute to beyond the apex, tipped with a single blunt cell; cells of lobe slightly convex, averaging 12 μ at

* Hep. Amaz. et And. 160. 1884.

† Jour. Linn. Soc. Bot. 30: 341. 1894.

the margin and 14 × 12 μ in median and basal portions, trigones small and usually distinct but sometimes confluent, intermediate thickenings occasional and usually indistinct; ocelli commonly two at base of lobe, measuring about 28 × 18 μ, a few other cells with similar contents often scattered through the lobe but inconstant in number and position: underleaves distant, suborbicular from a cuneate base, 0.07 mm. long, bifid about one third with an obtuse sinus and broad, obliquely spreading lobes, each about four cells wide, three cells long and tipped with two cells side by side, margin entire or nearly so, radicelliferous disc sometimes present: inflorescence dioicous: ♀ inflorescence on a more or less elongated branch, innovating on one side, the innovation usually simple and sterile; bracts obliquely spreading (somewhat unequal in size, the one subtending the innovation smaller than the other), sharply complicate and unequally bifid, keel bearing a narrow and entire wing, lobe obovate, measuring (in larger bract) 0.4 mm. in length and 0.25 mm. in width, apex rounded to obtusely pointed, margin irregularly crenulate from projecting cells, lobule obovate, 0.35 mm. long, 0.2 mm. wide, mostly rounded at the apex, margin as in lobe; bracteole free or nearly so, obovate, 0.35 mm. long, 0.2 mm. wide, bifid about one fourth with rounded, obliquely spreading lobes and blunt sinus, margin minutely crenulate; perianth about one third exserted, obovoid, 0.6 mm. long, 0.35 mm. wide, truncate or slightly retuse at the apex with a short but distinct beak, sharply five-keeled in upper part, the keels not winged but vaguely and irregularly crenulate from projecting cells with thickened walls: ♂ inflorescence and mature sporophyte not seen. (PLATE 26, FIGURES 14–25.)

On bark of trees. Jamaica: John Crow Peak, *Evans* (*88*, *92*). No. 88 may be designated the type.

Apparently the closest ally of *H. reflexula* is *H. uncinata* Steph.,* now known from Cuba, Santo Domingo, Puerto Rico, and Trinidad. The two species agree in size, in the form of the leaves and underleaves, and in the measurements of the leaf-cells. The bracts and perianths yield the best characters for separating them. In *H. uncinata* the margins of the lobes are distinctly toothed, and the keels of the perianth bear dentate to spinose wings, whereas in *H. reflexula* the margins of the bracts are scarcely more than crenulate, and the keels of the perianth, although sharp, are destitute of distinct wings. In the absence of floral organs the determina-

* Hedwigia 35: 97. 1897. See also Evans, Bull. Torrey Club 30: 549. *pl. 20. f. 12–24.* 1903.

tion is beset with greater difficulties. It should be noted, however, that the leaf-lobes in *H. uncinata* are less commonly reflexed than in the new species, that their apical acuminations are longer and more abrupt, that their margins are rather more distinctly crenulate, that the leaf-cells have less distinct trigones, and that the lobule, although strongly inflated, shows the free margin and apex clearly without dissection.

Two other related species are the Puerto Rico *H. subacuta* Evans* and *Lejeunea* (*Harpalejeunea*) *stricta* Lindenb. & Gottsche,† originally described from Mexican specimens but recently collected by the writer at Mabess River, Jamaica. In *H. subacuta* the lobes of the stem-leaves are rounded to subacute at the apex, in the latter case being usually tipped with a single cell; occasionally on the leaves of small branches there may be two superimposed cells at the apex, but this can hardly be regarded as a typical condition. In *L. stricta* the lobes of the leaves are a little sharper than in *H. subacuta* and often show two superimposed cells. In this species, however, the bracteole is scarcely retuse, and the keels of the perianth bear narrow, denticulate wings.

Leiolejeunea gen. nov.

Plants small, neither pigmented nor glossy: stems prostrate, sparingly branched: leaves contiguous to loosely imbricated, the lobe squarrose, convex, obliquely spreading, ovate, gradually narrowed toward apex; lobule ovate in outline, strongly inflated along keel, apical tooth unicellular, sharp, hyaline papilla distal and marginal, arising from the cell next the apical tooth; cells of lobe plane or slightly convex, with local thickenings of the walls: underleaves distant, broad at apex and showing two rounded divisions separated by a shallow sinus: ♀ branch without subfloral innovations; bracts much larger than the leaves, very unequally bifid, the lobule being small and sometimes obsolete; bracteole shortly bifid; perianth slightly compressed, obovoid, distinctly beaked, destitute of keels and smooth or nearly so on surface: ♂ inflorescence short, not proliferating; bracts monandrous, imbricated, shortly and subequally bifid with rounded divisions, strongly inflated; bracteoles similar to the underleaves, limited to base of spike. (Name from λεῖος, smooth, and *Lejeunea*, in allusion to the perianth without keels.)

* Bull. Torrey Club 30: 547. *pl. 20. f. 1–11.* 1903.

† G. L. & N. Syn. Hep. 756. 1847.

The underleaves of *Leiolejeunea* agree in all essential respects with those of *Harpalejeunea*, and this peculiarity will at once serve to distinguish the genus from all the other genera of the *Lejeuneae Schizostipae*. The leaf-lobes and leaf-cells are also much the same as in *Harpalejeunea*, but the differential characters derived from the lobules, bracts, and perianths are so striking that the two genera could hardly be united. In *Leiolejeunea* the apical tooth of the lobule forms a continuous line with the proximal portion of the free margin, while the hyaline papilla is distal in position and slightly displaced from the apical tooth; in *Harpalejeunea* the hyaline papilla is situated at the proximal base of the apical tooth in a slight indentation. In *Leiolejeunea* the lobes of the bracts are much larger than the lobules, the latter being reduced to small basal folds; in *Harpalejeunea* the lobules are always distinct and are only a little smaller than the lobes. In *Leiolejeunea* the perianth is practically smooth, the only indications of keels being five very vague and slight elevations in the apical region; in *Harpalejeunea* the perianth develops five sharp keels. The absence of true subfloral innovations in *Leiolejeunea* and their constant presence in *Harpalejeunea* should also be emphasized in distinguishing the genera.

In the majority of the *Lejeuneae* with bifid underleaves, the hyaline papilla of the lobule is proximal in position, agreeing in this respect with *Harpalejeunea*. Both *Euosmolejeunea* and *Cheilolejeunea*, however, show a distal papilla, which perhaps indicates some relationship with *Leiolejeunea*. In *Euosmolejeunea* the relatively large underleaves with pointed divisions and the sharply five-keeled perianth afford distinguishing peculiarities, while in *Cheilolejeunea* the divisions of the underleaves are also pointed and the strongly flattened perianth shows sharp lateral keels and a more or less distinct postical keel. The genus *Leiolejeunea* is at present monotypic, being based on the following species:

Leiolejeunea grandiflora sp. nov.

Dull, yellowish green, growing in depressed mats: stems 0.05 mm. in diameter, loosely adherent to the substratum, irregularly pinnate, the branches widely spreading, never microphyllous: leaves mostly more or less imbricated, the lobe falcate-ovate, 0.35 mm. long, 0.25 mm. wide, antical margin decurrent by a single

cell (as in *Harpalejeunea*), nearly straight near base, then strongly outwardly curved to apex, postical margin slightly curved, forming a shallow indentation at junction with keel, apex obtuse or rounded, margin entire or very vaguely crenulate from projecting cells; lobule 0.2 mm. long, 0.1 mm. wide, free margin revolute or appressed to lobe, sinus lunulate, forming together with the apical tooth the opening into the water-sac; cells of lobe averaging 16 μ at the margin, 20 × 16 μ in the middle, and 25 × 16 μ at the base, trigones large and distinct, triangular, intermediate thickenings occasional, oval or rotund, sometimes confluent; ocelli none: underleaves appressed, broadly obovate, 0.12 mm. long, 0.19 mm. wide, cuneate toward base, slightly retuse at the apex, thus forming the two rounded divisions, margin faintly crenulate from projecting cells: inflorescence dioicous: ♀ inflorescence borne on a more or less elongated branch; bracts widely spreading, the lobe abruptly dilated from a narrow base, falcate, the antical margin strongly curved and much longer than the postical, ovate, 0.95 mm. long, 0.75 mm. wide, abruptly acuminate, margin sparingly and irregularly dentate with rounded or obtuse teeth, lobule linear, obtusely pointed, 0.17 mm. long, 0.03 mm. wide, sometimes obsolete, keel rounded, not winged; bracteole slightly adnate at base on both sides, ovate to ligulate, 0.6 mm. long, 0.25 mm. wide, shortly bifid at the apex with a sharp sinus and erect obtuse or rounded divisions, margin more or less crenulate from projecting cells; perianth not projecting beyond bracts, 0.7 mm. long, 0.45 mm. wide, truncate or slightly retuse at the apex: ♂ inflorescence occupying a short branch or terminal on a longer branch: neck of fertilized archegonium usually projecting through beak of perianth: capsule about 0.25 mm. in diameter; spores irregular in form but mostly oblong, greenish, about 28 μ in short diameter, minutely verruculose on surface and also bearing scattered circular patches of minute radiating ridges. (PLATE 27, FIGURES 1–10.)

On bark of trees. Jamaica: Blue Mountain Peak, *Johnson* (*5, 6*), *Evans* (*221 p. p.*). No. 6 is the type specimen.

In the absence of floral organs *L. grandiflora* might easily be confused with some of the species of *Harpalejeunea* in which the leaves are blunter than is usual in this genus. Among West Indian species *H. subacuta* might be cited as an example. Of course the dissection of the lobule and the demonstration of the hyaline papilla would at once remove all doubt, but there are a few other differences which might also be noted in this connection. In *L. grandiflora* there is a more marked indentation at the junction of

the postical margin of the lobe and the keel than in *H. subacuta*, the trigones of the leaf-cells are more pronounced, and there are no basal ocelli. Even the underleaves, although built up on the same plan as in *H. subacuta*, are composed of a much larger number of cells, the divisions being often six cells long and five to seven cells wide at the base; in *H. subacuta* the divisions are usually only three cells long and four cells wide at the base.

Odontolejeunea longispica sp. nov.

Brownish or yellowish green, scattered or growing in loose, depressed mats, more or less mixed with other hepatics: stems 0.1 mm. in diameter, copiously and irregularly branched, the branches widely spreading, often soon floriferous: leaves contiguous or loosely imbricated, the lobe plane or a little convex, rarely narrowly revolute along postical margin, widely spreading, slightly falcate, ovate, maximum size about 1.0 × 0.7 mm. but often considerably smaller, especially on the branches, antical margin scarcely arching across axis, strongly curved from base to apex, postical margin straight or slightly curved, apex broad and rounded, margin sparingly but sharply dentate or spinose except near the base, the teeth irregular, varying from projecting cells to structures five cells long and three cells wide at base, the large teeth more usual on branch-leaves, teeth along postical margin no larger than the others and sometimes obsolete; lobule subtriangular in outline, about 0.2 mm. long, inflated at base, more or less plane and appressed to lobe in outer part, free margin straight or nearly so (forming one side of the triangle), entire except for the apical tooth, the latter mostly consisting of two superimposed cells arising from a base two or three cells wide, hyaline papilla usually arising from the inner surface of one of these basal cells, sinus short and straight; lobule often poorly developed; cells of lobe plane or nearly so, averaging 17 μ at the margin, 32 × 25 μ in the middle and 32 μ at the base, trigones minute, triangular, intermediate thickenings frequent, narrowly elliptical, apparently never confluent: underleaves distant, orbicular, 0.2 mm. long, plane, entire or subcrenulate from projecting cells, attached by a strongly arched line and often narrowly decurrent at base: inflorescence dioicous: ♀ inflorescence usually borne on a more or less elongated branch, more rarely on a short branch, innovating on one side, the innovation short and sterile or soon again floriferous; bracts obliquely spreading, the lobules represented by minute basal folds, lobe ovate, 0.7–1.0 mm. long, 0.4–0.7 mm. wide, spinose-dentate; bract subtending innovation narrowly winged along keel; bracte-

ole free, narrowly oblong or obovate, 0.4–0.7 mm. long, 0.2–0.35 mm. wide, entire or vaguely crenulate; perianth about half exserted, obovate in outline, 1.2 mm. long, 0.8 mm. wide, cuneate toward base, broad and truncate or slightly retuse at the apex with a short beak, postical surface with a broad and low keel, smooth or with an occasional tooth near the apex, lateral wings extending to below the middle, two or three cells broad, usually bearing from four to nine teeth, those in the apical region spine-like, sometimes three or four cells long and two or three cells wide at the base, those along sides smaller and sometimes reduced to single projecting cells: ♂ inflorescence occupying a more or less elongated branch, simple or sparingly subdivided, apparently never proliferating; bracts distant to contiguous, usually in from four to twelve pairs, the lobe widely spreading, ovate, 0.5 mm. long, 0.3 mm. wide, plane or nearly so, spinose-dentate, teeth usually four or five, the apical sometimes a little larger than the others, lobule strongly inflated, ovate in outline, 0.25 mm. long, 0.17 mm. wide, free margin revolute and appressed to lobe except in apical region, the apical tooth sometimes as in the leaves but more frequently poorly developed or obsolete, sinus straight or nearly so; antheridia borne singly or in pairs; bracteoles distant, orbicular, 0.15 mm. long, entire: mature sporophyte not seen. (PLATE 27, FIGURES 11–19.)

On leaves in damp woods. Jamaica: Lapland near Catadupa, 600 m. altitude, *Harris* (*11119 p. p.*).

If the genus *Odontolejeunea* is accepted in the restricted sense recently recommended by the writer,* *O. longispica* is the third species to be definitely recorded from the West Indies, the two others being *O. lunulata* (Web. f.) Schiffn., the type of the genus, and *O. Sieberiana* (Gottsche) Schiffn. Both of these species are widely distributed in tropical America. The lobule in *O. longispica* is a little aberrant because it bears but a single tooth and because the hyaline papilla, although displaced from the margin, is often borne on a marginal cell. In all other respects the species is a typical member of the genus.

When compared with *O. lunulata*, in which the inflorescence is also dioicous, *O. longispica* is found to be much less robust. The leaves are smaller, the local thickenings of the cell-walls are less pronounced and sometimes scarcely apparent, the underleaves are more distant, much smaller, and entire. In the perichaetial

* Bull. Torrey Club 31: 183. 1904. *O. lunulata* and *O. Sieberiana* are also described and figured in this paper.

bracts the lobes are usually spinose-dentate, the teeth being larger, fewer, and more irregular than in *O. lunulata*, and the same difference is shown by the lateral wings of the perianth. The antheridial spikes yield differential characters which are even more important. Although the number of bracts which they bear is no larger than in *O. lunulata*, the spikes appear longer because the bracts are further apart and sometimes do not overlap at all. The lobes of the bracts show but few modifications when compared with ordinary branch-leaves, and the bracteoles are distant instead of being imbricated. The sexual branches in *O. longispica* scarcely adhere to the substratum because the radicelliferous discs on the underleaves are poorly developed and rarely give rise to rhizoids. Most of the peculiarities which separate the new species from *O. lunulata* will also separate it from the paroicous *O. Sieberiana*. In exceptional cases the underleaves and bracts in this species are entire and the postical surface of the perianth shows a few scattered teeth in the upper part, but the resemblance to *O. longispica* stops here. The plants are fully as robust as in *O. lunulata*, the lobules bear several teeth along the free margin, and the short male spikes have imbricated bracteoles.

Another species which bears a strong resemblance to *O. longispica* is *Phragmicoma affixa* Tayl.,* which also seems to be confined to the island of Jamaica. Through the kindness of Professor Farlow the writer has been able to examine the type material of this species from the Taylor herbarium. It grew mixed with *Radula Grevilleana* Tayl. on leaves of *Danaea alata* and consists of a few fragmentary female plants with perianths. The species should apparently be referred to *Odontolejeunea*, in spite of the fact that the leaves are much less toothed than is usual, while the wings of the perianth are either entire or subdenticulate. The double innovations which subtend the female flowers would also be somewhat aberrant in this genus. All of these peculiarities will help to separate *P. affixa* from *O. longispica*. The lobules in the two species are very similar, but in *P. affixa* there are sometimes indications of a second tooth between the apical tooth and the base; the apical tooth itself consists of only one or two cells and bears the hyaline papilla on its inner surface. The leaf-

* Ann. & Mag. Nat. Hist. 20: 380. 1847.

cells in *P. affixa* are exceedingly delicate, and the trigones are difficult to demonstrate.

Vegetative reproduction in *O. longispica* is carried on by means of leafy propagula, which are very similar to those already noted in *O. lunulata* and *O. Sieberiana*.* All that were seen still attached were situated behind perigonial bracts, but it is hardly to be supposed that they are restricted to this position. The underleaves of the propagula are almost exactly the same as in *O. lunulata*, the second one showing a large radicelliferous disc with two layers of coalesced rhizoids, precisely as in that species. The leaves, however, exhibit a number of differences and are modified to an even greater degree. The first leaf is more or less reflexed and is abruptly contracted at the apex into a long point. The other marginal teeth are numerous but very minute, each one usually consisting of a single projecting cell. The second, third, and fourth leaves are also sharp-pointed at the apex, but the other teeth tend to become more scattered and larger, so that by the time the fifth leaf is reached, the distinction in size between the apical and marginal teeth is scarcely apparent. The lobules of the first four or five leaves are represented by minute basal folds, and the apex consists of a single projecting cell, which bears the hyaline papilla on its inner surface. Occasionally one of these rudimentary lobules will show vague indications of a second tooth between the apex and base, thus indicating perhaps an approach to other members of the genus. A tendency to branch is sometimes shown very soon by the propagula, and in one observed instance a male spike arose directly behind the second leaf.

Brachiolejeunea bahamensis sp. nov.

Dull green, varying to brown or almost black, scattered or growing in depressed mats: stems 0.14 mm. in diameter, sparingly and irregularly pinnate, the branches all conforming to the *Lejeunea* type, obliquely to widely spreading, similar to the stem or with somewhat smaller leaves, never microphyllous: leaves imbricated, the lobe suberect and convolute about the stem when dry, widely spreading and more or less squarrose when moist, slightly falcate, convex, oblong-ovate, 0.9 mm. long, 0.5 mm. wide, rounded to subcordate at base, antical margin strongly out-

* Bull. Torrey Club 31: 191. 1904.

wardly curved to the rounded or obtuse apex, postical margin slightly curved, margin everywhere entire; lobule ovate-triangular in outline, 0.5 mm. long, 0.25 mm. wide, the inflated portion forming a conical water-sac extending along the keel and about half as long as the lobe, keel straight or slightly arched, distinctly indented in outer part and usually forming a continuous line with postical margin of lobe, free margin rounded or subcordate at base, appressed to lobe for about two thirds its length and then passing by a straight or very shallow sinus into the postical margin of lobe, appressed portion usually with five or six teeth, the innermost rounded, the others (including the outermost or apical) mostly three or four cells long and one or two cells wide at base, often curved toward the surface of lobe, hyaline papilla at proximal base of outermost tooth, slightly displaced from the margin but sometimes borne on the antical surface of a marginal cell; cells of lobe plane or a little convex, averaging 13 μ at the margin, 25 × 18 μ in the middle and 30 × 23 μ at the base, trigones distinct, triangular but usually with one concave and two convex sides, intermediate thickenings infrequent, oval: underleaves loosely imbricated, plane, broadly orbicular, 0.35 mm. long, 0.4 mm. wide, rounded to minutely auriculate at the base, rounded to truncate at the apex, margin entire: inflorescence autoicous: ♀ inflorescence usually borne on a more or less elongated branch, more rarely on a very short branch, innovating on both sides, rarely on but one, the innovations widely spreading, sterile or soon again floriferous; bracts obliquely spreading, sharply complicate with a narrow and entire wing along keel, lobe broadly ovate, 0.8 mm. long, 0.5 mm. wide, obtusely pointed, irregularly sinuate, lobule oblong, 0.4 mm. long, 0.12 mm. wide, adnate for most of its length, apex obtuse, acute, or apiculate; bracteole free or nearly so, oval or oblong, 0.7 mm. long, 0.4 mm. wide, rounded to truncate at the apex; perianth about half exserted, ovoid, 0.9 mm. long, 0.5 mm. wide, cuneate toward base, rounded to truncate at apex with a short beak, scarcely compressed, ten-keeled (four antical, four postical, and two lateral), the keels rounded, extending to the middle or below: ♂ inflorescence usually on a leading branch, terminal or becoming intercalary by proliferation; bracts imbricated, mostly in from three to ten pairs, diandrous, similar to the leaves but with more obliquely spreading, shorter lobes and relatively broader and more inflated lobules, the free margins of the latter being more irregularly toothed, keel strongly arched; bracteoles imbricated, similar to the underleaves: capsule 0.4 mm. in diameter; spores minutely verruculose, about 40 μ in diameter. (PLATE 28, FIGURES 1–14.)

On bark of trees. Abaco: Old Kerr's Point, *Brace* (*2027 p. p.*). New Providence: junction of Southeast and Soldiers' roads, *Coker* (*1 p. p.*); ten miles west of Nassau, *Coker* (*2*); Grant's Town, *E. G. Britton* (*562*); north slope of Blue Hills, *E. G. Britton* (*584*); Fox Hills path, *Britton & Millspaugh* (*2090*); near Tea House, *E. G. Britton* (*3191*). Watling's Island: Cockburn Town and vicinity, *Britton & Millspaugh* (*6120*). Crooked Island: road to Vauxhall, *Brace* (*4746*); Stopper Hill, *Brace* (*4816*). Cuba: Matanzas, *Britton & Wilson* (*81*). All of these localities except the last are in the Bahamian archipelago. No. 4816, from Crooked Island, may be designated the type.

When this species was first studied by the writer it was referred to *B. corticalis* (Lehm. & Lindenb.) Schiffn., and it is cited under this name by Coker in the only list of Bahamian Hepaticae which has yet been published.* The two plants resemble each other very closely in general appearance, in size, in color, in the form of the leaves and underleaves, and in the structure of the leaf-cells. They differ in inflorescence, *B. corticalis* being dioicous, and in certain characters derived from the lobules, the underleaves, and the floral organs. In *B. bahamensis* the free margin of the lobule usually bears five teeth, each three or four cells long, and the underleaves are rounded or minutely auriculate at the base; in *B. corticalis* the free margin of the lobule usually bears only four teeth, each one or two cells long, and the underleaves either have subparallel sides or are cuneate at the base. In *B. bahamensis* the divisions of the perichaetial bracts are narrowed toward the apex and more or less acute, while the lobule, which is much shorter than the lobe, is adnate for the greater part of its length; in *B. corticalis* the divisions of the bracts are rounded at the apex, and the lobule, which is nearly as long as the lobe, projects considerably beyond the keel. In *B. bahamensis* the perianth seems to be constantly ten-keeled, while in *B. corticalis* the number of keels varies from five to eight. The new species is also remarkable because all of its branches, so far as observed, conform to the *Lejeunea* type, while in *B. corticalis* branches of the *Frullania* type are not infrequent.

* In Shattuck: The Bahaman Islands 248. 1905. The true *B. corticalis* has since been collected on the island of Great Bahama and on Cat Island by Britton and Millspaugh (*2533, 2646, 2719, 2723, 5899*).

On account of its ten-keeled perianth *B. bahamensis* belongs to a group of four closely related American species, all characterized by this peculiarity. The other species belonging to this group are *B. densifolia* (Raddi) Evans, *B. chinantlana* (Gottsche) Schiffn., and the recently described *B. insularis* Evans.* *B. densifolia* is widely distributed in South America and has also been reported from the West Indies; *B. chinantlana* was originally described from Mexican specimens but has recently been found in the mountains of Jamaica; *B. insularis* is known from Cuba, Jamaica, and Puerto Rico. Of these four species *B. densifolia* and *B. chinantlana* are at once distinguished from *B. bahamensis* by their larger size and more or less pointed leaves; *B. densifolia* is further characterized by being dioicous, and *B. chinantlana* by being paroicous. In *B. insularis* the inflorescence is also paroicous, but this species comes much closer to *B. bahamensis* than the others on account of the rounded lobes of its leaves. It is, however, more robust, many of the vegetative branches conform to the *Frullania* type, the basal auricles of the underleaves are much better developed, and the margins of the lobules have more numerous and often more irregular teeth.

Symbiezidium laceratum sp. nov.

Brownish green, growing in depressed mats, similar in general appearance to *S. transversale*: stems 0.15 mm. in diameter: leaves imbricated, the lobe obliquely spreading, sometimes plane, sometimes slightly convex along antical border and concave along postical, rarely revolute at the apex, scarcely falcate, ovate-oblong, 1.2–1.3 mm. long, 0.7–0.75 mm. wide, antical margin rounded at base and arching partially across axis, then slightly outwardly curved to the broad and rounded apex, postical margin straight or nearly so, margin entire or irregularly sinuous in apical region; lobule when well developed ovate-lanceolate in general outline, 0.3 mm. long, 0.15 mm. wide, strongly inflated in basal half; cells of lobe averaging 23 μ at the margin, 30 μ in the middle, and 35 × 30 μ at the base, trigones and intermediate thickenings conspicuous: underleaves imbricated, plane or nearly so, broadly orbicular, 0.7 mm. long, 0.95 mm. wide, sometimes abruptly cuneate and short-decurrent at base but usually with the margin in this region straight and meeting the axis at approximately a right angle, apex broad, rounded or truncate, often slightly sinuous, margin otherwise

* For notes on these species, see Evans, Bull. Torrey Club 35: 158–161. 1908.

entire: inflorescence autoicous: ♀ inflorescence arising from the stem or from a leading branch; bracts obliquely to widely spreading, complicate, sometimes with a narrow and entire wing along keel, lobe oblong to obovate, 0.75 mm. long, 0.4 mm. wide, rounded at apex, lobule similar to lobe and of about the same size, rounded to obtuse at the apex; bracteole obovate, 0.7 mm. long, 0.4 mm. wide, rounded to truncate at apex; perianth about half exserted beyond the bracts, obovate, 1.2 mm. long, 0.85 mm. wide, rounded to truncate at apex with a short beak, lateral keels winged to about the middle, the wings coarsely and irregularly laciniate or lacerate to within from one to three cells of the keels, the laciniae straight or variously curved and contorted, rarely branched, usually from five to ten cells long and two cells wide at base or to beyond the middle, antical surface of perianth smooth, postical surface bearing an indefinite number of scattered laciniae, some of them often arranged in two interrupted longitudinal lines, apparently representing the two angles of an obsolete postical keel: ♂ inflorescence occupying a short lateral branch or terminal on a longer branch, occasionally borne on a subfloral innovation, apparently never proliferating; bracts in from two to six pairs, imbricated, subequally bifid, both lobe and lobule somewhat narrowed toward the rounded apex, keel not winged but slightly crenulate from projecting cells; bracteoles restricted to base of spike, similar to the underleaves but smaller: mature sporophyte not seen. (PLATE 28, FIGURES 15–20.)

On bark of trees. Hayti: Plaisance to Marmelade, 800 m. *Nash* (*654*).

In its autoicous inflorescence *S. laceratum* agrees with *S. barbiflorum* (Lindenb. & Gottsche) Evans, *S. vincentinum* (Gottsche) Trevis.,* and *Platylejeunea Kroneana* Steph.,† the four together constituting a group of closely related species. *S. barbiflorum* and *S. vincentinum* are rather widely distributed in tropical America and both occur in the West Indies. *P. Kroneana* is known only from the original material, collected by Krone at Santa Caterina, Brazil. This last species is erroneously described as dioicous, but a portion of the type specimen kindly communicated by its author is clearly autoicous and is so labeled on the packet. In distinguishing these four species from one another the most important characters are drawn from the bracteoles and perianths, but the leaves and underleaves sometimes yield a few supplementary differences.

* See Evans, Bull Torrey Club 34: 540–543. *pl. 31. f. 11–14.* 1908.

† Hedwigia 35: 117. 1896.

In *S. barbiflorum*, which is especially close to the Haytian species, the underleaves are constantly long-decurrent, and the bracteole is distinctly bifid. The two species agree in developing many laciniae on the postical surface of the perianth, but these laciniae are even more numerous in *S. barbiflorum* than in *S. laceratum* and are also characterized by being shorter and more delicate. In *S. vincentinum* the underleaves are usually broader than long, agreeing in this respect with *S. laceratum*, but they differ in being constantly decurrent. Occasionally the leaves in this species are apiculate as earlier authors have emphasized, but this condition is far from constant and many plants bear rounded leaves only. The bracteole is retuse, irregularly sinuous-crenate, or emarginate at the apex, and the perianth is either smooth on the postical surface or bears only a few scattered laciniae. The laciniae along the lateral keels tend to be shorter and less numerous than in *S. laceratum*. In *Platylejeunea Kroneana* the underleaves are also decurrent as in *S. vincentinum*, but the bracteole is undivided as in *S. laceratum*. The lateral laciniae of the perianth, however, are reduced to spine-like teeth and the postical surface is smooth or nearly so. In this species the lobules of the perigonial bracts tend to be acute or apiculate instead of rounded, but this is a difference which may well be inconstant. In the remaining species of *Symbiezidium* known from the West Indies the inflorescence is dioicous.

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Explanation of plates 26–28

The figures were all drawn by the writer and prepared for publication by Miss Hyatt.

PLATE 26.

Trachylejeunea dilatata Evans. 1. Part of plant with perianth, postical view, ×35. 2. Part of stem with branch, postical view, ×35. 3. Leaf, antical view, ×35. 4. Part of plant with two male inflorescences, postical view, ×35. 5. Cells from middle of lobe, ×265. 6. Cells from antical margin of lobe seen from postical surface, ×200. 7. Cells from margin of lobe in cross section, ×200. 8. Apex of lobule, ×200. 9. Underleaf, ×200. 10–12. Bracts and bracteole from a single involucre, ×35. 13. Transverse section of perianth in upper third, ×45. The figures were all drawn from the type specimen (*311*).

Harpalejeunea reflexula Evans. 14. Part of plant with perianth, postical view, ×45. 15. Part of stem, postical view, ×45. 16. Cells from middle of lobe, ×265. 17. Cells from antical margin of lobe, ×200. 18. Apex of lobe, ×200. 19. Apex of lobule, ×200. 20. Underleaf, ×200. 21–23. Bracts and bracteole from a single involucre, ×45. 24. Transverse section of perianth, 45. 25. Lateral keel of perianth in section, ×200. The figures were all drawn from the type specimen (*88*).

PLATE 27.

Leiolejeunea grandiflora Evans. 1. Part of plant with perianth and the bases of two branches, postical view, ×35. 2. Part of plant with male inflorescence, postical view, ×35. 3. Cells from middle of lobe, ×265. 4. Cells from antical margin of lobe, ×200. 5. Apex of lobule, ×200. 6. Half of underleaf, ×200. 7, 8. Bract and bracteole from the same involucre, ×35. 9. Bract from an unfertilized inflorescence, ×35. 10. Transverse section of perianth, ×35. The figures were all drawn from the type specimen (*6*).

Odontolejeunea longispica Evans. 11. Part of stem with the bases of three branches, postical view, ×25. 12. Female branch with perianth and innovation, postical view, ×25. 13. Short antheridial spike, postical view, ×25. 14. Cells from middle of lobe, ×200. 15. Apex of lobule, ×200. 16–18. Bracts and bracteole from the same involucre, ×25. 19. Propagulum, postical view, ×25. The figures were all drawn from the type specimen (*11119 p. p.*).

PLATE 28.

Brachiolejeunea bahamensis Evans. 1. Part of plant with perianth and proliferating antheridial spike, postical view, ×25. 2. Branch with perianth, postical view, ×25. 3. Leaf, antical view, ×25. 4. Cells from middle of lobe, ×265. 5, 6. Free margins of lobules, 45. 7. Apical tooth of lobule, ×200. 8. Basal auricle of underleaf, ×200. 9. Unfertilized female flower, the innovations dissected away, postical view, ×25. 10–12. Bracts and bracteole from the same involucre, ×25. 13. Transverse section of perianth, ×25. 14. Perigonial bracts with antheridia, postical view, ×45. Figs. 2 and 14 were drawn from specimens collected by E. G. Britton (*584*), the remaining figures from the type specimen (*4618*).

Symbiezidium laceratum Evans. 15. Part of plant with perianth, postical view, ×25. 16. Female branch, postical view, ×25. 17. Involucre and perianth, postical view, ×25. 18–20. Bracts and bracteole from the same involucre, ×45. The figures were all drawn from the type specimen (*654*).

Additional Philippine Polyporaceae

WILLIAM ALPHONSO MURRILL

A list of Philippine polypores recently added to the herbarium of the New York Botanical Garden was published in this journal about a year ago (Bull. Torrey Club **34**: 465–481. 1907). In April, 1908, a large and valuable shipment of Philippine fungi, 637 packets in all, was received for determination from the Bureau of Science, Manila, through Mr. Elmer D. Merrill, botanist. Most of these are duplicates and will become permanent additions to the Garden herbarium, but a few, not in duplicate, will be returned to Manila. The following list includes the pileate polypores of this collection, arranged in alphabetical order under their tribes.

The localities here included are very varied, representing a large number of the islands and many different altitudes and latitudes. The principal collectors are as follows: Messrs. Elmer D. Merrill, A. D. E. Elmer, E. B. Copeland, H. M. Curran, M. L. Merritt, H. N. Whitford, Eugenio Fénix, Maximo Ramos, L. Mangubat, and Mrs. Mary S. Clemens. Private numbers or letters follow the name of the collector, those given in parenthesis being assigned by the Bureau of Science or the Bureau of Forestry. Synonyms listed in my former paper are not repeated here except in connection with discussions relative to additional knowledge or notes of interest.

Tribe POLYPOREAE

BJERKANDERA ADUSTA (Willd.) Karst. Medd. Soc. Faun. Fl. Fenn **5**: 38. 1879.

Mindanao: Mt. Apo, 2000 m., Davao, *Copeland 1075;* Camp Keithley, Lake Lanao, *Clemens bj.*

Coltricia benguetensis Murrill, sp. nov.

Sporophore consisting of several pilei arising on short stipes from a thickened base attached to the host at two points, the pilei being in all stages of development; pileus flabelliform to reniform, usually umbonate behind at the point of attachment, slightly con-

vex above and below, corky, rigid, 3–4 × 4–5 × 0.5–0.8 cm.; surface anoderm, subglabrous, uneven, neither sulcate nor zonate, fulvous behind, ferruginous in front; margin broadly sterile, rather thick, rounded, ferruginous, context ferruginous, corky, zonate, homogeneous, 5 mm. thick; tubes 1–2 mm. long, pallid within, mouths cinereous-fuscous, glistening, regular, angular, 5 to a mm., edges thin, subentire: hyphae ferruginous, 2–3 μ; cystidia scanty, pointed, straight, curved or sinuous, bulbous at the base, dark fulvous, 25–40 μ long, 7–10 μ thick at the thickest part.

Type collected about prostrate logs of *Pinus insularis* at Baguio, Benguet Province, Luzon, October–November, 1905, by E. D. Merrill, (*5003*). Also collected on the same host in Benguet Province, March, 1904, by A. D. E. Elmer, *6047*.

CORIOLOPSIS BADIA (Berk.) Murrill, Bull. Torrey Club **34**: 466. 1907. *P. asper* Jungh., *P. strigatus* Berk., and *P. squamaeformis* Berk. hardly differ specifically from this species. Specimens have also been called *P. brunneopictus* Berk., described from Brazil. In the two collections made by Mrs. Clemens in Mindanao, the pores are much larger than usual, being at least twice their normal size.

Luzon: Montalban, Rizal Province, *Merrill*, (*5085*); Mt. Mariveles, Bataan Province, *Copeland 158*; Bauang, Union Province, *Elmer 5710*; Mt. Arayat, Pampanga Province, *Merrill*, (*5031*); Santa Maria Mavitac, Laguna Province, *Curran*, (*8930*). Mindanao: Camp Keithley, Lake Lanao, *Clemens av, ay*.

CORIOLOPSIS CAPERATA (Berk.) Murrill, N. Am. Flora **9**: 77. 1908. *Polyporus caperatus* Berk. Ann. & Mag. Nat. Hist. **3**: 391. 1839. (Type from the Philippines.)
Mindanao: Mt. Apo, 1300 m., Davao, *Copeland 1178*.

Coriolopsis Copelandi Murrill, sp. nov.

Pileus subimbricate, dimidiate, sessile, laterally confluent, broadly attached, very slightly flexible, conchate, 3–4 × 5–6 × 0.3–0.5 cm.; surface glabrous,. thinly encrusted, very shallowly sulcate, slightly radiate-rugose when dry, opaque, very dark brown or black; margin rather thick, sterile, entire: context punky, dark fulvous, 1–2 mm. thick; tubes 3–4 mm. long, dark brown within, hymenium sordid brown, almost blackish in some specimens, cracking when dry, mouths minute, thin-walled, angular, 7–9 to a mm., edges entire to slightly fimbriate.

Type collected on dead wood in Davao, Mindanao, March 28, 1904, by E. B. Copeland *714*. Also collected at Todaya, Davao, Mindanao, April 25, 1904, by E. B. Copeland, (*1214*), and on a dicotyledonous log on the Lamao River, Luzon, February 2, 1904, by E. B. Copeland, *147*.

Coriolopsis bataanensis Murrill, sp. nov.

Pileus thin, soft, slightly flexible, rather fragile, dimidiate to flabelliform, often laterally extended by confluence, narrowly attached, conchate, 3–4 × 3–10 × 0.3–0.5 cm.; surface spongy-tomentose, anoderm, very uneven, sulcate, subzonate, fulvous, varying to isabelline or fuliginous in places; margin rather thin, undulate, isabelline: context 2–4 mm. thick, two-layered, soft and dull fulvous above, considerably harder and ochraceous next to the tubes, which are 1–2 mm. long, bay within, mouths glistening, isabelline to bay, distinctly angular, 3–4 to a mm., quite variable in size, edges thin, entire: spores smooth, ovoid, hyaline, rather abundant, 5 × 4 μ; hyphae subhyaline, extremely fragile; cystidia none.

Type collected on dead wood on Mt. Mariveles, 230 m., Bataan Province, Luzon, January 29, 1904, by E. B. Copeland, *143*.

CORIOLOPSIS DERMATODES (Lév.) Murrill, Bull. Torrey Club **34**: 466. 1907. *Polyporus xeranticus* Berk., described from India, is hardly different from this species.

Mindanao: Camp Keithley, Lake Lanao, *Clemens*, two collections. Luzon: Sablan, Benguet Province, *Elmer 6183*; Bauang, Union Province, *Elmer 5747*; Bosoboso, Rizal Province, *Ramos*, (*2158*).

Coriolopsis melleoflava Murrill, sp. nov.

Pileus thin, coriaceous, very flexible, broadly effused, narrowly attached, dimidiate to subcircular, 2–3 cm. long, 1 mm. thick, extending several centimeters laterally by confluence; surface clothed with dense short tomentum, many times narrowly concentrically sulcate, melleoflavous, slightly brownish behind; margin undulate or irregularly notched or lobed, thin, sterile, pallid: context melleoflavous, membranous; tubes less than a mm. long, nearly white within, mouths pale melleous, irregular, averaging 2 to a mm., edges notched and more or less elongated, somewhat irpiciform.

Type collected on dead wood at Zamboanga, Mindanao, January, 1908, by H. N. Whitford and W. I. Hutchinson, (*9238*).

CORIOLOPSIS OCCIDENTALIS (Kl.) Murrill, Bull. Torrey Club **32**: 358. 1905.

Mindanao: Camp Keithley, Lake Lanao, *Clemens ap, m*; Pollok Harbor, *Copeland 331*. Negros: Gimagaan River, *Copeland 4*. Mindoro: Bongabong River, *Whitford 1440, 1441*. Batanes: *Fénix*, (*3868*), (*3871*), (*3885*), (*3888*). Luzon: Twin Peaks, Benguet Province, *Elmer 6356*; Lamao Forest Reserve, *Curran* (*7397*).

CORIOLOPSIS SEMILACCATA (Berk.) Murrill, Bull. Torrey Club **34**: 466. 1907.

Luzon: Lamao, Bataan Province, *Copeland 172*, *Curran*, (*7521*); Bosoboso, Rizal Province, *Ramos*, (*1217*); Mauban, Tayabas Province, *Curran*, (*9590*). Mindoro: Mt. Halcon, *Merrill*, (*6119*). Mindanao: Camp Keithley, Lake Lanao, *Clemens ac* and one other collection; Davao, *Copeland 552*. Negros: Gimagaan River, *Copeland 14*.

Coriolopsis subcrocata Murrill, sp. nov.

Pileus coriaceous, membranous, flaccid, elastic, effused-reflexed: the reflexed portion dimidiate, applanate, 1–2 cm. long and 1 mm. thick, extending laterally several centimeters; surface pale isabelline, nearly glabrous, very slightly zonate; margin thin, concolorous, entire, sterile: context pale isabelline, soft, very thin; tubes less than 1 mm. long, paler than the context, mouths regular, subcircular, glistening, 3 to a mm., edges firm, corky, entire.

Type collected on a dead trunk and branches on Mt. Mariveles, Bataan Province, Luzon, January 1, 1904, by E. D. Merrill, (*3694*).

CORIOLUS ATYPUS (Lév.) Pat. Tax. Hymén. 94. 1900.

Palawan: Victoria Peak, *Curran*, (*7484*). Mindoro: Mt. Halcon, *Merrill*, (*6121*), (*6122*). Luzon: Rizal Province, *Ramos*, (*1859*), (*1864*); Lamao River, Bataan Province, *Copeland 171*, *179*; Mt. Mariveles, Bataan Province, *Copeland 169*; Zambales Province, *Curran*, (*7020*); Mauban, Tayabas Province, *Curran*, (*9587*). Mindanao: Zamboanga, *Whitford & Hutchinson*, (*9302*); Malita, Davao, *Copeland 683*.

Coriolus Clemensiae Murrill, sp. nov.

Pileus rather thin, rigid, reniform, conchate, attached by a compressed projecting base resembling a stipe, 6 × 8 × 0.3 cm., base 2 × 2 × 0.3 cm.; surface glabrous, zonate, radiately furrowed

white with a slightly grayish tinge, the narrow zones shining; margin rather thick, fertile, reddish brown in dried specimens, subentire: context milk-white, fibrous, 1–2 mm. thick; tubes pale ochraceous when dry, 2 mm. long, mouths concolorous, 4–5 to a mm., circular to angular, edges firm, rather thick, entire: spores subglobose, smooth, hyaline, 3–4 μ; hyphae hyaline, 3–4 μ; cystidia none.

Type collected on dead wood at Camp Keithley, Lake Lanao, Mindanao, September–October, 1907, by Mary S. Clemens, *v.*

Coriolus Currani Murrill, sp. nov.

Pileus flabelliform, thin, somewhat flexible, almost plane above, slightly concave below, affixed by a short tubercle resembling the pileus in surface and substance, 3–5 × 4–6 × 0.1–0.3 cm.; surface isabelline to wood-brown, glabrous, shining, multizonate, smooth between the shallow concentric furrows; margin acute, entire or undulate, pallid, sterile in a narrow distinct band: context white to pallid, homogeneous, punky, 1–1.5 mm. thick; tubes white to pale yellowish throughout, 1–2 mm. long, mouths glistening, circular, very regular, 5–6 to a mm., edges firm, entire, obtuse.

Type collected on dead wood on Mt. Maquiling, Laguna Province, Luzon, October 23, 1907, by H. M. Curran and M. L. Merritt, (*8965*). Also collected as follows: Mt. Maquiling, Laguna Province, Luzon, October 23, 1907, by H. M. Curran and M. L. Merritt, (*8964*); Rizal Province, Luzon, January, 1907, by Maximo Ramos, (*1866*); Batangas Province, Luzon, November, 1907, by H. M. Curran and M. L. Merritt.

CORIOLUS ELONGATUS (Berk.) Pat. Tax. Hymén. 94. 1900.

Luzon: Santa Maria Mavitac, Laguna Province, *Curran*, (*8909*).

CORIOLUS MAXIMUS (Mont.) Murrill, Bull. Torrey Club **34**: 467. 1907.

Mindanao: Mungalaron, Davao, *Copeland 712;* Camp Keithley, Lake Lanao, *Clemens a, k, s, aq;* Port Banga, Zamboanga District, *Whitford & Hutchinson*, (*9411*). Luzon: Lamao River, Bataan Province, *Copeland 174;* Mt. Malaraya, Tayabas Province, *Curran & Merritt*, (*8958*); Zambales Province, *Curran* (*7025*). Balabac: *Mangubat*, (*534*). Mindoro: Bongabong River, *Whitford 1438.*

CORIOLUS MURINUS (Lév.) Pat. Tax. Hymén. 94. 1900.

Luzon: Lamao River, Bataan Province, *Copeland 170, 185,*

247; Mauban, Tayabas Province, *Curran*, (*9591*), (*9592*); Paete-Piapi, Laguna and Tayabas Provinces, *Curran*, (*9640*), (*9644*); Caraga, Surigao Province, *Merrill*, (*5460*). Mindanao: Camp Keithley, Lake Lanao, *Clemens c*; Davao, *Copeland 458*, *925*. Negros: Gimagaan River, *Copeland 5*. Lumbacan: *Merrill* (*5281*).

CORIOLUS NIGROMARGINATUS (Schw.) Murrill, Bull. Torrey Club **32**: 649. 1906.

Mindoro: Mt. Halcon, *Merrill*, (*6116*). Negros: Gimagaan River, *Copeland 9*. Luzon: Santa Maria Mavitac, Laguna Province, *Curran*, (*8927*); Antipolo, Rizal Province, *Curran*, (*7042*); Montalban, Rizal Province, *Merrill*, (*5081*). Mindanao: Malita, Davao, *Copeland 668*; Davao, *Copeland 876*; Camp Keithley, Lake Lanao, *Clemens N, af, cg, r*.

CORIOLUS PROLIFICANS (Fr.) Murrill, N. Am. Flora **9**: 27. 1907.

Luzon: Lamao Forest Reserve, Bataan Province, *Curran*, (*7396*).

Coriolus perpusillus Murrill, sp. nov.

Pileus very small, irregular, laterally confluent, dimidiate, broadly attached, 0.5–1 × 1.5 × 0.2–0.3 cm., surface milk-white, azonate, glabrous, not polished; margin concolorous, entire, sterile, rather thick: context milk-white, punky, fibrous, 1 mm. thick; tubes white to slightly yellowish, very thin-walled, 1 mm. or less long, mouths glistening, nearly white, regular, angular, 6 to a mm., edges thin, toothed or fimbriate.

Type collected on dead wood at Camp Keithley, Lake Lanao, Mindanao, July, 1907, by Mary S. Clemens, *bf*.

Coriolus rubritinctus Murrill, sp. nov.

Pileus small, slightly flexible, obovate to flabelliform, more or less cuneate behind, plane above and below, laterally confluent at times, 1.5–2 × 1.5–2.5 × 0.1–0.3 cm.; surface faintly zonate, smooth, glabrous, opaque, ochraceous-fulvous with reddish brown blotches; margin abruptly acute, fertile, concolorous, entire, slightly inflexed on drying: context pallid, punky-fibrous, 1 mm. or less thick; tubes pallid, 2 mm. long, mouths glistening, ochraceous to discolored, regular, angular, 4–5 to a mm., edges corky, thin, entire: spores globose, smooth, hyaline, 2.5–3 μ; hyphae hyaline, 3 μ; cystidia none.

Type collected on dead wood on Mt. Halcon, Mindoro, November, 1906, by E. D. Merrill (*6117*).

Coriolus subvernicipes Murrill, sp. nov.

Pileus flabelliform or reniform, subimbricate, thickest behind, becoming very thin and flexible at the margin, narrowly attached, somewhat irregular and plicate, 2–4 × 4–7 × 0.1–0.6 cm.; surface lustrous, glabrous, multizonate, reddish brown, isabelline in a few zones, finely radiate-striate; margin very thin, slightly paler, broadly sterile, notched or irregular: context milk-white, tough, 1–5 mm. thick; tubes short, white to pale yellowish, firm, 1 mm. or less long, mouths glistening, nearly circular, regular, 4–5 to a mm., edges rather thin, entire.

Type collected on dead *Cassia* at Bosoboso, Rizal Province, Luzon, February, 1907, by Maximo Ramos, (*2144*). No. (*2145*) is the same species, collected at the same time.

Cycloporellus barbatus Murrill, sp. nov.

Pileus reniform, conchate, thin, flexible, imbricated at times, attached by a short umbo, 3–4 × 5–6 × 0.05–0.1 cm.; surface multizonate, shallowly concentrically sulcate, light brown to dark reddish brown, covered with coarse, blackish brown, appressed hairs 2 mm. or more in length; margin thin, pallid, entire, narrowly sterile: context very thin, fibrous, containing blackish, horny layers; tubes less than 1 mm. long, dark fulvous within, the cavities hoary, mouths regular, angular, glistening, dark brown, 6–7 to a mm., edges entire, becoming thin: spores subglobose, smooth, hyaline, 2–3 μ; hyphae melleous to dark fulvous, 3.5–5 μ; cystidia blackish brown, opaque, slender, hyaline at the tip, regular in shape, rather abundant, 15–25 μ long, 4 μ thick at the base, tapering to a point.

Type collected on dead wood in Zambales Province, Luzon, November–December, 1907, by H. M. Curran and M. L. Merritt, (*8208*).

CYCLOPORELLUS CICHORIACEUS (Fr.) Murrill, Bull. Torrey Club **34**: 468. 1907. *Favolus transiens* Cesati, described from Borneo, is not distinct from this species.

Batanes: *Fénix*, (*3874*). Mindanao: Mt. Apo, 2000 m., Davao, *Copeland 1067*.

CYCLOPORELLUS MICROCYCLUS (Lév.) Murrill, Bull. Torrey Club **34**: 468. 1907. *Polystictus xerampelinus* Kalchb., described from Australia, should be added to the synonyms of this species.

Luzon: Montalban, Rizal Province, *Merrill*, (*5086*); Mt. Malaraya, Tayabas Province, *Curran & Merritt*, (*8960*); Rizal Province, *Ramos*, (*1860*), *Foxworthy*, (*84*); Mt. Mariveles, 333 m., Bataan Province, *Copeland 144*. Mindanao: Camp Keithley, Lake Lanao, *Clemens ae, ah, ca, j*.

EARLIELLA CORRUGATA (Pers.) Murrill, Bull. Torrey Club **34**: 468. 1907.

Luzon: Mount Maquiling, Laguna Province, *Merrill*, (*5153*); Mount Maquiling, Batangas Province, *Curran & Merritt*, (*8940*); Lamao River, Bataan Province, *Copeland 164*. Panay: Capiz, *Copeland 19*. Balabac: *Mangubat*, (*535*). Mindanao: Davao, *Copeland 477, 518*: Catalonan, Davao, *Copeland 924*; Camp Keithley, Lake Lanao, *Clemens cd, ao*; Caraga, Surigao Province, *Merrill*, (*5459*).

Favolus resinosus Murrill, sp. nov.

Pileus sessile, dimidiate, applanate, rigid, attached by a broad base, 6× 10× 1–2 cm.; surface anoderm, glabrous, opaque, brown to black, more or less resinous, proliferous, becoming incrusted with age; margin abruptly acute, isabelline with a tinge of flesh-color, undulate or coarsely notched: context corky to indurate, brown with a reddish hue, 2–3 mm. thick; tubes 1 cm. long, large, light brown within, mouths ochraceous, subhexagonal, rigid, 1–2 mm. in diameter, radiately elongated near the margin, reaching 4 mm. at times, edges rather thick, entire: spores subglobose to ovoid, smooth, hyaline, 4–6 μ long; hyphae hyaline, 3–4 μ; cystidia none.

Type collected on dead wood at Bosoboso, Rizal Province, Luzon, July, 1906, by Maximo Ramos, (*1214*).

Favolus subrigidus Murrill, sp. nov.

Pileus sessile, dimidiate, thin, tough, slightly flexible, 2–3 × 3–4 × 0.2–0.3 cm.; surface very finely tomentose to glabrous in zones, reddish brown behind, isabelline in front, radiate-rugose; margin thin, broadly sterile, reddish brown when dry, nearly entire: context pale isabelline, punky-fibrous, 1–2 mm. thick; tubes regular, hexagonal, very shallow in front, 1 mm. deep behind, white throughout, mouths 2 to a mm., edges rigid, entire, at first thick, becoming thinner with age.

Type collected on dead wood at Mauban, Tayabas Province, Luzon, March, 1908, by H. M. Curran, (*9593*).

FAVOLUS TENUIS (Hook.) Murrill, Bull. Torrey Club **32**: 100. 1905.

Luzon: Santa Maria Mavitac, Laguna Province, *Curran*, (*8908*), (*8910*), (*8911*), (*8913*); Lamao River, Bataan Province, *Copeland 248*; Sablan, Benguet Province, *Elmer 6141*, *6180*; Antipolo, Rizal Province, *Curran*, (*7043*); Mt. Mariveles, Bataan Province, *Copeland 158a*; Irisan, Benguet Province, *Elmer 5947*; Rizal Province, *Ramos*, (*1862*); Montalban, Rizal Province, *Merrill*, (*5090*). Camiguin: Babuyanes, *Fénix*, (*4153*), (*4156*), (*4157*). Babuyan: *Fénix*, (*3931*). Batanes: *Fénix*, (*3889*). Mindanao: Davao, *Copeland 494*, *832*; San Ramon, Zamboanga District, *Copeland*; Camp Keithley, Lake Lanao, *Clemens P*, *aw*.

FAVOLUS WIGHTII (Kl.) Ricker, Philipp. Jour. Sci. **1**: Suppl. 286. 1906.

LUZON: Lamao Forest Reserve, Bataan Province, *Curran*, (*7388*); Lamao, Bataan Province, *Curran*, (*7527*); Mt. Mariveles, Bataan Province, *Merrill*, (*3692*); Mauban, Tayabas Province, *Curran*, (*9589*); Mt. Malaraya, Tayabas Province, *Curran & Merritt*, (*8956*). Mindanao: Davao, *Copeland 635*.

FUNALIA FUNALIS (Fr.) Pat. Tax. Hymén. 95. 1900. This species is not very distinct from *Funalia villosa*.

Luzon: Bulacan Province, *Curran*, (*7181*); Twin Peaks, Benguet Province, *Elmer 6355* (specimen young and doubtfully referred to this species).

FUNALIA LEONINA (Kl.) Pat. Tax. Hymén. 95. 1900. *Polyporus Dybowskii* Pat. Bull. Soc. Myc. Fr. **8**: 53. *pl. 7. f. 6.* 1892.

Luzon: Montalban, Rizal Province, *Merrill*, (*5082*).

FUNALIA PHILIPPINENSIS Murrill, Bull. Torrey Club **34**: 469. 1907.

Luzon: Lamao, Bataan Province, *Copeland 157*.

HAPALOPILUS GILVUS (Schw.) Murrill, Bull. Torrey Club **31**: 418. 1904.

Luzon: Mt. Mariveles, Bataan Province, *Merrill*, (*3697*); Lamao River, Bataan Province, *Copeland 191*.

HAPALOPILUS LICNOIDES (Mont.) Murrill, Bull. Torrey Club **31**: 417. 1904.

Luzon: Mt. Mariveles, 230 m., Bataan Province, *Copeland 192;* Lamao, Bataan Province, *Curran,* (*7543*). Mindanao: Camp Keithley, Lake Lanao, *Clemens b, l;* Todaya, Davao, 1200 m., *Copeland 1275.*

HAPALOPILUS MALAIENSIS (Cooke) Murrill. *Polystictus malaiensis* Cooke, Grevillea **14**: 13. 1885. (Type from Perak.) This is written *P. malacensis* on the type sheet at Kew and is so printed in Saccardo. The species is easily distinguished by its large pores.

Luzon: Lamao Forest Reserve, Bataan Province, *Curran,* (*7394*); Twin Peaks, Benguet Province, *Elmer 6344.* Mindanao: Mt. Apo, 530 m., Davao, *Copeland 1155.*

Hapalopilus Ramosii Murrill, sp. nov.

Pileus distorted by change of position of host, new pilei appearing in an imbricate fashion on both surfaces of the now erect older sporophore, sessile, dimidiate, corky, thickest behind, becoming very thin at the margin, convex or applanate above, 2–3 × 4–5 × 0.5–1 cm.; surface anoderm, slightly uneven, azonate, finely hirtose-tomentose, fulvous; margin acute, subentire, concolorous or slightly paler, sterile: context fulvous, homogeneous, 2–4 mm. thick; tubes grayish umbrinous within, 2–4 mm. long, mouths minute, 7 to a mm., subangular, regular, glistening, changing color with the direction of the light from dark fulvous to bay, edges thin, firm, entire: spores subglobose, smooth, hyaline, 3–4 μ; hyphae ferruginous, 3 μ; cystidia slender, fulvous, pointed, bent at the base, scanty, 15–25 × 5–6 μ.

Type collected on dead *Calophyllum Inophyllum* near Bosoboso, Rizal Province, Luzon, July, 1906, by Maximo Ramos, (*1198*).

HAPALOPILUS SUBRUBIDUS Murrill, Bull. Torrey Club **34**: 470. 1907.

Luzon: Sablan, Benguet Province, *Elmer 6134;* Mt. Mariveles, Bataan Province, *Copeland 166.* Mindanao: Camp Keithley, Lake Lanao, *Clemens ag;* San Ramon, Zamboanga, *Copeland 739.* What appears to be a young, thin form of this species was collected by Curran and Merritt, (*8970*), on Mt. Maquiling, Laguna Province, Luzon, Oct. 23, 1907.

HEXAGONA CUCULLATA (Mont.) Murrill, Bull. Torrey Club **31**: 332. 1904.

Batanes: *Fénix,* (*3887*).

Hexagona luzonensis Murrill, sp. nov.

Pileus flabelliform, tapering behind, 3 × 4 × 0.2–0.3 cm.; surface isabelline, becoming grayish-tinted when dry, glabrous, radiate-striate, tessellate near the margin, which is rather firm, entire, opaque, strongly inflexed on drying: context soft, white to isabelline, 1 mm. thick behind, very thin near the margin, rather fragile; tubes large, decurrent, white to discolored, 1–2 mm. long, mouths 1–2 × 1 mm., edges thin, somewhat fimbriate: stipe lateral, short, thick, white, glabrous, 5 × 5 mm.

Type collected on dead wood at Lamao, Bataan Province, Luzon, September, 1907, by H. M. Curran, (*7541*).

Hexagona pertenuis Murrill, sp. nov.

Pileus flabelliform, cuneate behind, 2–3 × 1.5–2.5 × 0.05 cm.; surface white, glabrous, faintly radiate-striate, tessellate near the margin, which is very thin, translucent, undulate, rarely toothed in places, fissured in age: context very thin, white, somewhat elastic when dry, but easily broken; tubes decurrent, white, becoming ochraceous, very shallow, of the usual elongated hexagonal form, mouths 0.5 × 0.25 mm., edges thin, slightly fimbriate: stipe very short, 3 mm. long, 1–2 mm. thick, lateral, cylindrical, concolorous, hardly umbilicate above.

Type collected on dead wood on Mt. Malaraya, Tayabas Province, Luzon, November, 1907, by H. M. Curran and M. L. Merritt, (*8948*).

HEXAGONA PHILIPPINENSIS (Berk.) Ricker, Phil. Jour. Sci. **1**: Suppl. 4. 287. 1906. *Polyporus philippinensis* Berk. Lond. Jour. Bot. **1**: 148. 1842. (Type from the Philippines, collected by Cuming.) *Favolus philippinensis* Sacc. Syll. Fung. **6**: 393. 1888. Very similar to *P. grammocephalus* above, but tubes very much larger and elongated-hexagonal. *Leucoporus hirto-lineatus* Pat., described from Java, can hardly be different from this species, judging from the description.

Luzon: Lamao, Bataan Province, *Copeland 1407*.

Inonotus Clemensiae Murrill, sp. nov.

Sporophore large, imbricate, uniformly dark fulvous-brown throughout; pileus sessile, dimidiate, conchate, rigid, fragile when dry, 5–7 × 10–15 × 1–1.5 cm.; surface soft, anoderm, azonate, short-tomentose, slightly radiate-rugose; margin thick, fertile, irregularly notched or undulate: context spongy-fibrous, homogeneous, averaging 1 cm. in thickness; tubes 5 mm. long, mouths

angular, 2–3 to a mm., edges thin, entire: spores ellipsoid, smooth, pale fulvous, 6–9 × 5–6 μ; hyphae thick, ferruginous; cystidia none.

Type collected on dead wood at Camp Keithley, Lake Lanao, Mindanao, September–October, 1907, by Mary S. Clemens, *as.*

INONOTUS FRUTICUM (B. &. C.) Murrill, Bull. Torrey Club **31**: 601. 1904.

Balabac: *Mangubat*, (*531*).

LAETIPORUS SPECIOSUS (Batt.) Murrill, Bull. Torrey Club **31**: 607. 1904.

Luzon: Mt. Isidro, Pangasinan Province, *Curran & Merritt*, (*8409*).

MICROPORELLUS DEALBATUS (B. & C.) Murrill, Bull. Torrey Club **32**: 483. 1905. *P. Adami* Berk. (type from Ceylon) and *P. rasipes* Berk. (type from the Admiralty Islands) do not appear to differ from this species.

Luzon: Mount Tapulao, Zambales Province, 1000–1400 m., *Curran & Merritt*, (*8203*). Mindanao: Camp Keithley, Lake Lanao, *Clemens.*

MICROPORELLUS SUBDEALBATUS Murrill, Bull. Torrey Club **34**: 471. 1907.

Mindanao: Zamboanga, *Whitford & Hutchinson*, (*9226*).

NIGROPORUS DURUS (Jungh.) Murrill, Bull. Torrey Club **34**: 471. 1907.

Luzon: Mauban, Tayabas Province, *Curran*, (*9588*); Santa Maria Mavitac, Laguna Province, *Curran*, (*8916*).

NIGROPORUS VINOSUS Murrill, Bull. Torrey Club **32**: 361. 1905. *Polyporus badius* Jungh. and *Polystictus Möllerianus* Sacc. are not distinct from this species. Specimens in the Bresadola herbarium are erroneously labeled *Polyporus carneo-niger* Berk, and at Berlin *Polyporus badius* Berk.

Luzon: Bosoboso, Rizal Province, *Ramos*, (*2148*); Mt. Mariveles, Bataan Province, *Merrill*, (*3695*). Mindinao: Camp Keithley, Lake Lanao, *Clemens aa, h.*

POLYPORUS CELEBICUS P. Henn. Monsunia **1**: 12. *pl. 1. f. 5.* 1899.

It is difficult to separate this species from *P. Perula* in some

of its forms, although typical examples are quite easily distinguished. Many mycologists do not consider *P. celebicus* distinct.

Luzon: Bosoboso, Rizal Province, *Ramos*, (*2154*), Rizal Province, *Ramos*, (*1861*); Santa Maria Mavitac, Laguna Province, *Curran*, (*8922*), (*8923*); Mt. Maquiling, Laguna Province, *Curran & Merritt*, (*8963*); Lamao River, Bataan Province, *Copeland 176*. Mindanao: Davao, *Copeland 489*; Trail to Mt. Apo, 1666 m., Davao, *Copeland 1066*; Camp Keithley, Lake Lanao, *Clemens bd, be*. Negros: Gimagaan River, *Copeland 6, 10*. Batanes: *Fénix*, (*3873*).

POLYPORUS CORACINUS, Murrill, Bull. Torrey Club **34**: 471. 1907.
Negros: Gimagaan River, *Copeland 18*.

POLYPORUS ELEGANS (Bull.) Fr. Epicr. Myc. 440. 1838.
Mindanao: Camp Keithley, Lake Lanao, *Clemens al.*

POLYPORUS FISSUS Berk. Lond. Jour. Bot. **6**: 318. 1847.
Luzon: Santa Maria Mavitac, Laguna Province, *Curran*, (*8914*).

POLYPORUS FLABELLIFORMIS Kl. Linnaea **8**: 483. 1833.
Luzon: Baguio, Benguet Province, *Elmer 6045*.

POLYPORUS GRAMMOCEPHALUS Berk. Lond. Jour. Bot. **1**: 148. 1842.
Negros: Gimagaan River, *Copeland 8*. Luzon: Lamao River, Bataan Province, *Copeland 160*, *Curran*, (*7531*); Mount Maquiling, Laguna Province, *Merrill*, (*5154*); Bosoboso, Rizal Province, *Ramos*, (*1858*), (*4622*); Sablan, Benguet Province, *Elmer 6185*. Balabac: *Mangubat*, (*532*). Mindanao, Camp Keithley, Lake Lamao, *Clemens am.*

POLYPORUS PALENSIS Murrill, Bull. Torrey Club **34**: 472. 1907.
Luzon: Sablan, Benguet Province, *Elmer 6184*; Lamao River, Bataan Province, *Copeland 153*. Negros: Gimagaan River, *Copeland 20*.

POLYPORUS PERULA (Beauv.) Fr. Epicr. 437. 1838. This species is very abundant and variable. One form of it (Luzon: Mount Maquiling, Laguna Province, *Curran & Merritt*, (*8965*)) is decidedly tomentose in appearance, with narrow glabrous zones such as occur in young specimens of *Coriolus versicolor*.

Luzon: Lamao River, 115 m., *Copeland E, 178;* Lamao River, Bataan Province, *Copeland 180;* Lamao Forest Reserve, Bataan Province, *Foxworthy*, (*1583*); Mt. Mariveles, 800 m., Bataan Province, *Copeland 183;* Benguet Province, *Elmer 6146;* Baguio, Benguet Province, *Elmer 5940, 6046;* Sablan, Benguet Province, *Elmer 6133, 6182;* Santa Maria Mavitac, Laguna Province, *Curran*, (*8924*), (*8925*); Mt. Maquiling, Laguna Province, *Merrill*, (*5152*), *Curran & Merritt*, (*8963*), (*8967*), (*8968*); Bosoboso, Rizal Province, *Ramos*, (*2147*), (*2152*); Montalban, Rizal Province, *Merrill*, (*5088*); Mt. Arayat, Pampanga Province, *Merrill*, (*5032*); Mt. Malaraya, Tayabas Province, *Curran & Merritt*, (*8943*), (*8961*); Batangas Province, *Curran & Merritt*, (*8937*); Mt. Tapulao, 1000–1400 m., Zambales Province, *Curran & Merritt*, (*8204*), (*8205*); Zambales Province, *Curran & Merritt*, (*8209*); Paete-Piapi, Tayabas and Laguna Provinces, *Curran*, (*9642*), (*9645*). Palawan: Victoria Peak, *Curran*, (*7485*), (*7486*), (*7487*). Batanes: *Fénix*, (*3878*), (*3882*), (*3886*). Balabac: *Mangubat*, (*530*). Mindoro: *Merritt*, (*8815*); Mt. Halcon, *Merrill*, (*6115*). Mindanao: Zamboanga, *Whitford & Hutchinson*, (*9236*); Catalonan, Davao, *Copeland 926;* Mt. Apo, 2000 m., Davao, *Copeland 1154;* Davao, *Copeland 151, 707;* Camp Keithley, Lake Lanao, *Clemens ab, ad, bh, ch, cj,* "*K*," *n, o, t, z.*

PYCNOPORUS SANGUINEUS (L.) Murrill, Bull. Torrey Club **31**: 421. 1904.

Camiguin: Babuyanes, *Fénix*, (*4154*), (*4164*), (*4175*). Mindanao: Camp Keithley, Lake Lanao, *Clemens bc, ci;* Davao, *Copeland C.* Negros: Gimagaan River, *Copeland 3, 7.* Balabac: *Mangubat*, (*537*). Batanes: *Fénix*, (*3875*). Luzon: Pangisinan Province, *Ramos*, (*4980*); Montalban, Rizal Province, *Merrill*, (*5083*); Bosoboso, Rizal Province, *Ramos*, (*1199*), (*2155*); Manila, *Copeland 40;* Lamao, Bataan Province, *Curran*, (*7536*); Subig, Zambales Province, *Curran*, (*7021*), (*7022*); Santa Maria Mavitac, Laguna Province, *Curran*, (*8921*); Rizal Province, *Ramos*, (*1863*). Palmas: *Merrill*, (*5371*).

RIGIDOPORUS SURINAMENSIS (Miq.) Murrill, Bull. Torrey Club **34**: 473. 1907.

Luzon: Mt. Maquiling, Laguna Province, *Curran & Merritt*,

(*8969*); Santa Maria Mavitac, Laguna Province, *Curran*, (*8917*). Mindanao: Camp Keithley, Lake Lanao, *Clemens ai.*

Trametes conglobata Murrill, sp. nov.

Pileus consisting of several lobes closely imbricated in a rounded sporophore 4 × 7 × 5 cm.; lobes rigid, convex above, plane below, dimidiate, 1–2 × 1–4 × 0.5–2 cm.; surface uneven, opaque, dirty white, subglabrous, anoderm, azonate; margin obtuse, undulate, concolorous: context white or pallid, multizonate, 0.4–1.5 cm. thick; tubes about 1 mm. long, dirty white, thin-walled, mouths angular, slightly irregular, 5–6 to a mm., edges entire to undulate: spores ovoid to subglobose, smooth, hyaline, 3–4 μ long; hyphae hyaline, 3 μ; cystidia none.

Type collected on deadwood at Camp Keithley, Lake Lanao, Mindanao, September–October, 1907, by Mary S. Clemens.

Trametes insularis Murrill, sp. nov.

Pileus sessile, dimidiate, imbricate, irregular, thickish behind, decurrent, 2–4 × 3–7 × 1–1.5 cm.; surface rugose, anoderm, glabrous, black behind, light reddish brown in front; margin obtuse, sterile, ochraceous, entire: context white to pallid, woody, zonate, 1.5–3 mm. thick; tubes 1 cm. long behind, becoming gradually shorter toward the margin, the section appearing triangular, concolorous with the context, mouths grayish-isabelline, subcircular, 3 to a mm., edges thick, firm, entire, becoming thinner at maturity: spores subglobose, smooth, hyaline, 4–5 μ long; hyphae hyaline, 3–4 μ; cystidia none.

Type collected on prostrate logs of *Pinus insularis* at Baguio, 1500 m., Benguet Province, Luzon, October–November, 1905, by E. D. Merrill, (*5001*).

TRAMETES MULLERI Berk. Jour. Linn. Soc. Bot. **10**: 320. 1868.

This species has the appearance and habit of *Daedalea*, but the tubes are never daedaleoid. *Trametes conchata* Berk., described from the Philippines, appears to be a variety of this species with sordid context and tubes, such as often occurs in *Daedalea amanitoides.*

Luzon: Zambales Province, *Curran*, (*7023*), (*7026*); Lamao River, Bataan Province, *Copeland 165;* Bosoboso, Rizal Province, *Curran*, (*9527*); Tarlac Province, *Merrill*, (*3602*). Camiguin: Babuyanes, *Fénix*, (*4176*). Mindanao: Camp Keithley, Lake Lanao, *Clemens an* and one other collection.

Tyromyces Merrittii Murrill, sp. nov.

Pileus imbricate-multiplex, the lobes few in number and attached together in a prolonged stipitiform base, each lobe flabelliform, with cuneate base, 7–9 × 7–9 × 0.5 cm.; surface radiate-rugose and roughened with prominences of various sizes, sordid white, opaque, very minutely tomentose; margin irregular, variously lobed, rather thick, fertile, slightly deflexed: context fleshy-fibrous, very brittle when dry, milk-white, 2 mm. thick; tubes 3 mm. long, slender, nearly white within, mouths grayish-white, glistening, discolored in places, regular, thin-walled, 3 to a mm., edges firm, entire: spores ovoid, curved, smooth, hyaline, 5–6 × 3 μ; hyphae very fragile, hyaline, 4–5 μ; cystidia none.

Type collected on dead wood on Mt. Maquiling, Batangas Province, Luzon, November, 1907, by H. M. Curran and M. L. Merritt, (*8939*).

Tyromyces subchioneus Murrill, sp. nov.

Pileus sessile, dimidiate, applanate, fleshy-tough to fragile, 2 × 4 × 0.2 cm.; surface smooth, glabrous, grayish isabelline, wrinkled when dry; margin entire, thin, sterile and abruptly deflexed: context white, homogeneous, fragile, 1 mm. thick when dry; tubes very distinct from the context in color, dark yellowish gray within, 1 mm. long, mouths subcircular, regular, grayish, glistening, 5–6 to a mm., edges entire, thick at first, becoming thinner at maturity: spores oblong, ellipsoid, smooth, hyaline, 5–6 × 2 μ; hyphae hyaline, 3–4 μ; cystidia none.

Type collected on dead wood on Mt. Apo, 2160 m., Davao, Mindanao, April 20, 1904, by E. B. Copeland, *1074*.

Tyromyces unguliformis Murrill, sp. nov.

Pileus compressed-ungulate, plane below, much thicker behind, 5 × 8 × 1–3 cm.; surface anoderm, azonate, somewhat tuberculose, nearly glabrous, milk-white, opaque; margin abruptly acute, narrowly sterile, concolorous, entire: context white, fragile when dry, homogeneous, 5–8 mm. thick; tubes white or yellowish within, 1 cm. long behind, gradually shorter towards the margin, slender, mouths circular, regular, 4 to a mm., somewhat glistening, white with a silvery sheen, edges thick, entire: spores smooth, ovoid, hyaline, 3 × 2 μ; hyphae hyaline, 3 μ; cystidia none.

Type collected on dead wood on Balabac Island, March–April, 1906, by L. Mangubat, (*533*).

Whitfordia Murrill, gen. nov.

Hymenophore annual, epixylous, stipitate; surface glabrous, anoderm: context brown, fibrous to corky; tubes minute, cylindrical: spores hyaline: stipe lateral, black.

Type species, *Fomes Warburgianus* P. Henn.

Whitfordia Warburgiana (P. Henn.) Murrill. *Fomes Warburgianus* P. Henn.; Monsunia **1**: 10. *pl. 1. f. 3.* 1900. *Coriolopsis aneba* (Berk.) Murrill, Bull. Torrey Club **34**: 466. 1907. Specimens sent in previously were too young and aborted to determine accurately. The context of this species is rather pale when young, becoming blacker with age.

Lumbacan: *Merrill*, (*5280*). Negros: Gimagaan River, *Copeland 12, 17*. Luzon: Mount Maquiling, Laguna Province, *Merrill*, (*5150*). Mindoro: Bongabong River, *Whitford 1436*. Mindanao: Sibulan River, Davao, *Copeland 1308*; Malita, Davao, *Copeland 655*.

Tribe FOMITEAE

Amauroderma asperulatum Murrill, sp. nov.

Pileus reniform to nearly circular, thick, corky, rigid, convexo-concave, 5 cm. in diameter, 1.5 cm. thick; surface glabrous, avellaneous with two or three dark brown zones, thinly encrusted, neither laccate nor shining, rugose when dry; margin thick, undulate, sulcate: context thin, 1–2 mm., white, punky-fibrous, homogeneous; tubes very long and slender, 1–1.5 cm., wood-brown, mouths angular, 3 to a mm., edges thin, entire: spores copious, ovoid, deep yellowish brown, averaging 18 × 12 μ, studded with immense warts: stipe ascending, laterally attached, cylindrical, equal, slightly expanding above, resembling the pileus in surface, harder in substance, 5 cm. long, 6–7 mm. thick.

Type collected on the base of dead *Parkia* (?), at Lamao, Bataan Province, Luzon, February 2, 1904, by E. B. Copeland.

Amauroderma bataanense Murrill, sp. nov.

Pileus circular in outline, nearly plane, rigid, corky, 5 × 5 × 0.5 cm.; surface much wrinkled both concentrically and radially in drying, sulcate, faintly zonate, opaque, avellaneous to grayish brown, paler toward the margin, thinly encrusted, glabrous; margin undulate, truncate; context white or nearly so, 3 mm. thick at the center, very thin at the margin, homogeneous, firm; tubes fuscous-brown within and without, 2–3 mm. long, mouths rather large and angular at maturity, 3 to a mm., edges thin, firm,

entire: spores globose, very deep brown, thick-walled, lightly asperulate, copious, 12–14 μ: stipe central, subcylindrical, enlarged at the surface of the ground, tapering and radicate below, corticated, isabelline, woody, 6 × 0.6 cm.

Type collected on decaying underground roots in the region of Lamao, Bataan Province, Luzon, September, 1907, by H. M. Curran, (*7528*).

Amauroderma Clemensiae Murrill, sp. nov.

Pileus thin, tough, flexible, flabelliform to subcircular, conchate, deeply depressed behind, 5 × 6 × 0.2–0.3 cm.; surface glabrous, nearly smooth, multizonate, faintly radiate-rugose when dry, brown behind, avellaneous in front, with darker zones; margin very thin, entire to undulate, blackish and inflexed on drying: context punky-fibrous, pale isabelline, 0.5–1.5 mm. thick; tubes 1.5–2.5 mm. long, pallid within, mouths avellaneous, umbrinous when bruised, regular, glistening 4–5 to a mm., edges thin, entire, corky: spores subglobose to ovoid, smooth, faint yellowish brown, copious, 5–7 μ: stipe exactly lateral, curved, cylindrical, nearly even, slightly enlarged at the base and somewhat compressed where it joins the pileus, resembling the pileus in surface and context, but uniformly light brown in color and almost woody, 8 × 0.6–0.7 cm.

Type collected on dead roots near Camp Keithley, Lake Lanao, Mindanao, September–October, 1907, by Mary S. Clemens.

AMAURODERMA ELMERIANUM Murrill, Bull. Torrey Club **34**: 475. 1907.

Mindanao: Zamboanga, *Whitford & Hutchinson*, (*9288*).

Amauroderma Ramosii Murrill, sp. nov.

Pileus round-reniform, deeply incised at the hilum, where the stipe is attached, rigid, corky, slightly convex, 3 × 4 × 0.5 cm.; surface thinly encrusted, opaque, glabrous, very slightly sulcate-zonate, dark gray or blackish, much wrinkled on drying; margin thick, obliquely truncate, delicately penciled, undulate: context 1–2 mm. behind, very thin in front, nearly white, punky-fibrous; tubes 4–5 mm. long, slender, avellaneous, mouths concolorous or darker, regular, circular, 5 to a mm., edges very thick, entire: spores subglobose, finely asperulate, light yellowish brown, 8–10 μ: stipe laterally attached, suberect, curved and somewhat compressed, corticated, glabrous, paler than the pileus, woody, radicate and branched below, 7 × 0.4 cm.

Type collected on dead roots near Bosoboso, Rizal Province, Luzon, July, 1906, by Maximo Ramos, (*1211*).

ELFVINGIA ELMERI Murrill, Bull. Torrey Club **34**: 476. 1907.

Luzon: Subig, Zambales Province, *Curran*, (*7024*). Mindanao: Camp Keithley, Lake Lanao, *Clemens ar* and one other collection.

ELFVINGIA TORNATA (Pers.) Murrill, Bull. Torrey Club **30**: 301. 1903. *Ganoderma subtornatum* Murrill is probably only a form of this species having an excess of resin. The two genera come very close together here.

Mindanao: Davao, Copeland *380, 500*; Todaya, Davao, 1400 m., *Copeland*, 900 m., *Copeland 1223*; Camp Keithley, Lake Lanao, *Clemens i, y*, and one other collection. Luzon: Mount Maquiling, Laguna Province, *Merrill*, (*5155*); Bosoboso, Rizal Province, *Ramos*, (*1193*), (*1209*), (*1216*); Mt. Mariveles, *Copeland 167, 190*; Mt. Malaraya, Tayabas Province, *Curran & Merritt*, (*8944*); Zambales Province, *Curran & Merritt*, (*8203*); Rizal Province, *Foxworthy*, (*137*); Montalban, Rizal Province, *Merrill*, (*5087*); Lamao Forest Reserve, Bataan Province, *Curran*, (*7387*); Panai, Benguet Province, *Elmer*, (*5002*); Lamao River, Bataan Province, *Copeland 181, 189, 193*; Baguio, Benguet Province, *Elmer 6069*; Santa Maria Mavitac, Laguna Province, *Curran*, (8932). Balabac: *Mangubat*, (*536*). Camiguin: Babuyanes, *Fénix*, (*4169*), (*4173*), (*4178*). Palmas: *Merrill*, (*5370*).

FOMES AUBERIANUS (Mont.) Murrill, Bull. Torrey Club **32**: 491. 1905.

Mindanao: Camp Keithley, Lake Lanao, *Clemens au, bg*, and one other collection. Negros: Gimagaan River, *Copeland 13*.

FOMES LIGNEUS (Berk.) Cooke, Grevillea **13**: 119. 1884.

Mindanao: Camp Keithley, Lake Lanao, *Clemens* "*Q*".

FOMES LUZONENSIS Murrill, Bull. Torrey Club **34**: 476. 1907.

Luzon: Mt. Mariveles, Bataan Province, *Copeland 182*, on living *Dipterocarpus*. These specimens are too young to show typical surface markings or a stratified hymenium.

FOMES UNGULATUS (Schaeff.) Sacc. Syll. Fung. **6**: 167. 1888.

Luzon: Baguio, Benguet Province, *Elmer 5945*. No. 5238 (Luzon: Baguio, Benguet Province, *Curran*) appears to be a young and much discolored specimen of this species.

Fomes subresinosus Murrill, sp. nov.

Pileus semicampanulate, attached by an elongated umbo, concave below, woody, 6 × 8 × 1 cm.; surface glabrous, somewhat resinous, thinly encrusted, very rugose when dry, slightly sulcate, conspicuously banded with broad brown and shining-black zones; margin thick, abruptly acute and deflexed, entire or undulate, concolorous: context white, slightly pallid when dry, woody-fibrous, 3–5 mm. thick; tubes 5–8 mm. long, slender, brownish flesh-colored within when dry, mouths circular and whitish when young, becoming angular and concolorous at maturity, 3–4 to a mm., edges at first thick, becoming thin and lacerate: spores globose or subglobose, smooth, hyaline, 3–4 μ; hyphae hyaline; cystidia none.

Type collected on dead wood in the Lamao Forest Reserve, Bataan Province, Luzon, October, 1906, by F. W. Foxworthy, (*1628*). Also collected at Bosoboso, Rizal Province, Luzon, July, 1906, by Maximo Ramos, (*1215*).

Fomes subungulatus Murrill, sp. nov.

Pileus sessile, dimidiate, broadly attached, the point of attachment bounded by a narrow black zone, rigid, convex above, concave below, 6 × 8 × 1–2 cm.; surface sulcate, glabrous, anoderm, slightly tuberculose, isabelline, suffused in places with reddish brown; margin rounded, thick, entire: context thick, 5–8 mm., isabelline, zonate, soft-corky; tubes whitish within, slender, 3–5 mm. long, not distinctly stratified, mouths small, white to isabelline, perfectly circular, 5 to a mm., edges thick, obtuse, entire: spores ovoid, smooth, hyaline, 5 × 3.5 μ; hyphae hyaline, 5–6 μ; cystidia none.

Type collected on prostrate logs of *Pinus insularis* at Baguio, 1500 m., Benguet Province, Luzon, October–November, 1905, by E. D. Merrill, (*5005*).

GANODERMA AMBOINENSE (Lam.) Pat. Bull. Soc. Myc. Fr. **5**: 70. 1889.

Luzon: Lamao Forest Reserve, Bataan Province, *Curran*, (*7395*); Lamao, Bataan Province, *Copeland 1365*; Bosoboso, Rizal Province, *Ramos*, (*2157*). Negros: Gimagaan River, *Copeland 16*.

Ganoderma balabacense Murrill, sp. nov.

Pileus ascending from a short, thick tubercle, flabelliform to nearly circular, depressed at the center or behind, very concave below, 15 × 15 × 2 cm.; surface glabrous, thinly encrusted,

opaque brown behind, laccate, shining and dark reddish brown in front, rugose and roughly tuberculose, sulcate; margin abruptly acute, yellowish, sterile, entire: context ferruginous above, fulvous below, woody-fibrous, 1 cm. thick; tubes cinereous-fuscous, slender, 1 cm. long, mouths circular, regular, 3–4 to a mm., whitish when young, concolorous at maturity, edges thick, entire: spores ovoid, finely asperulate, pale brownish, 8–9 × 4–5 μ; hyphae ferruginous-fulvous; cystidia none.

Type collected on the island of Balabac, March–April, 1906, by L. Mangubat, (*539*).

Ganoderma Currani Murrill, sp. nov.

Pileus corky, rigid, reniform, convex above, concave below, slightly depressed behind, attached at the hilum to a very long stipe, 3–4 × 5–6 × 0.5 cm.; surface glabrous, laccate, shining, reddish brown, shallowly concentrically sulcate, radiate-rugose; margin thick, undulate, concolorous: context fulvous, punky, 1–2 mm. thick; tubes slender, 3–4 mm. long at the thickest part of the pileus, grayish fuscous, mouths becoming concolorous, circular to angular, 4–5 to a mm.: spores ovoid, distinctly asperulate, deep fulvous, copious, 8–10 × 6–7 μ: stipe erect, sublaterally attached, nearly cylindrical, slightly irregular, equal, laccate, glabrous, encrusted, 15–20 cm. long, 5–10 mm. thick.

Type collected on dead wood at Lamao, Bataan Province, Luzon, September, 1907, by H. M. Curran, (*7544*).

NIGROFOMES MELANOPORUS (Mont.) Murrill, Bull. Torrey Club **31**: 425. 1904.

Luzon: Lamao, Bataan Province, *Curran*, (*7540*).

PYROPOLYPORUS ALBOMARGINATUS (Lév.) Murrill, Bull. Torrey Club **34**: 478. 1907. *Polyporus ochrocroceus* P. Henn. (Monsunia **1**: 145. 1899.) exactly corresponds to this species, judging from the description, and should be treated as a synonym.

Luzon: Bosoboso, Rizal Province, *Ramos*, (*2149*), (*2150*), (*2156*); Lamao River, Bataan Province, *Copeland 173*; Mt. Mariveles, Bataan Province, *Merrill*, (*3698*). Mindanao: Mt. Apo, Davao, *Copeland 1077*. A specimen collected at Camp Keithley by Mrs. Clemens agrees well with *Fomes pyrrhocreas* Cooke, which I have considered synonymous with *P. albomarginatus*. It may be that further collections will prove them distinct species.

PYROPOLYPORUS CALIGINOSUS (Berk.) Murrill, Bull. Torrey Club **34**: 478. 1907.

Mindanao: Camp Keithley, Lake Lanao, *Clemens ak, d, f.*

PYROPOLYPORUS ENDOTHEIUS (Berk.) Murrill, Bull. Torrey Club **34**: 478. 1907. *Pyropolyporus Williamsii* Murrill, Bull. Torrey Club **34**: 479. 1907. A quantity of good material shows gradations between the two forms distinguished as species in a former paper. When young the context is bright-colored, becoming darker and thinner with age.

Mindoro: Mt. Halcon, *Merrill*, (*6120*). Camiguin: Babuyanes, *Fénix*, (*4177*). Mindanao: Camp Keithley, Lake Lanao, *Clemens cf*, and one other collection. Luzon: Montalban, Rizal Province, *Merrill*, (*5089*); Bosoboso, Rizal Province, *Curran*, (*9526*); Mt. Malaraya, Tayabas Province, *Curran & Merritt*, (*8950*).

PYROPOLYPORUS FASTUOSUS (Lév.) Murrill, Bull. Torrey Club **34**: 479. 1907.

Mindoro: Mt. Halcon, *Merrill*, (*6114*). Luzon: Antipolo, Rizal Province, *Curran*, (*7044*). Camiguin: Babuyanes, *Fénix*, (*4171*). Mindanao: Zamboanga, *Whitford & Hutchinson*, (*8942*); Camp Keithley, Lake Lanao, *Clemens bi, p, u, x.*

PYROPOLYPORUS LAMAENSIS Murrill, Bull. Torrey Club **34**: 479. 1907.

Luzon: Mt. Mariveles, Bataan Province, *Copeland 145*. Negros: Gimagaan River, *Copeland 15*. Mindanao: Catalonan, Davao, *Copeland 922*.

PYROPOLYPORUS PECTINATUS (Kl.) Murrill, Bull. Torrey Club **34**: 479. 1907. *Fomes substygius* B. & Br., from Ceylon, is considerably larger than the usual form of this species, but it does not appear to be specifically distinct. *Polyporus Hasskarlii* Lév., described from Java in 1844, is identical with Klotsch's species described from the East Indies eleven years previously.

Luzon: Santa Maria Mavitac, Laguna Province, *Curran*, (*8912*); Lamao, Bataan Province, *Curran*, (*7520*). Palawan: Ewiig River, *Merrill*, (*3586*).

Pyropolyporus subextensus Murrill, sp. nov.

Pileus large, woody, sessile, dimidiate, applanate, slightly convex below, 7–8 × 10–12 × 1 cm.; surface rough, slightly sulcate, glabrous, thinly encrusted, opaque brown; margin slightly lobed, very obtuse, fulvous, sterile: context ferruginous, multizonate, woody, nearly 1 cm. thick; tubes short, 1–2 mm. long each season, fulvous in older layers, grayish fuscous in those of recent growth, mouths minute, fulvous, circular, thick-walled, 7–8 to a mm., edges thick, entire: hyphae ferruginous, 3–4 μ; cystidia flask-shaped or irregular in outline, pointed, fulvous, very abundant, 15–30 μ long, 8–10 μ thick at the base.

Type collected on dead wood at Camp Keithley, Lake Lanao, Mindanao, September, 1907, by Mary S. Clemens. Also collected on Mt. Apo, 2000 m., Davao, Mindanao, April 22, 1904, by E. B. Copeland, "*E.*"

Pyropolyporus tenuissimus Murrill, sp. nov.

Pileus thin, woody, rigid, dimidiate, concave above, convex below, decurrent behind, 1–1.5 × 4–5 × 0.1–0.2 cm.; surface rough, spongy-tomentose to subglabrous, neither sulcate nor zonate, fulvous to fuliginous, thicker and more spongy near the margin, which is fulvous, finely tomentose, rather thick, undulate: context fulvous, very thin, punky to corky; tubes stratified, 0.5 mm. or less long each season, cinereous-fuscous within, mouths whitish-stuffed when young, minute, 6 to a mm., circular, regular, avellaneous at first, becoming darker at maturity, edges thick, entire: spores globose, smooth, hyaline, copious, 3–4 μ; hyphae melleous, 2–3 μ; cystidia fulvous, cuspidate, scanty, 15-20 μ long, 5–7 μ thick at the base.

Type collected on dead wood in Davao, Mindanao, March 13, 1904, by E. B. Copeland, *497*.

Pyropolyporus tricolor Murrill, sp. nov.

Pileus very large, applanate, comparatively thin, rigid, woody, 15 × 25 × 1–2 cm.; surface roughly tuberculose and ridged, irregularly sulcate, thinly encrusted, glabrous, dark brown to dull black, rimose in dried specimens; margin thin, obtuse, reddish, subentire: context woody, brick-red, with white dendroid markings, 5–8 mm. thick; tubes 4–5 mm. long each season, brick-red in the older layers, yellowish red with white lines in recent growths, mouths minute, regular, circular, glistening, melleous, 4 to a mm., edges rather thick, entire: spores subglobose, smooth, hyaline, with smoky brownish, rather thin walls, 5–6 μ; hyphae melleous, 3–4 μ; cystidia none.

Type collected on dead wood at Santa Maria Mavitac, Laguna Province, Luzon, February, 1908, by H. M. Curran, (*8933*).

Tribe DAEDALEAE

CYCLOMYCES FUSCUS Fr. Linnaea **5**: 512. *pl. 11. f. 3.* 1830. (Type from Mauritius.)

Luzon: Mt. Malaraya, Tayabas Province, *Curran & Merritt,* (*8949*); Benguet Province, *Elmer 6048.*

DAEDALEA AMANITOIDES Beauv. Fl. Owar. 1: 44. 1805.

Luzon: Mt. Malaraya, Tayabas Province, *Curran & Merritt,* (*8945*), (*8953*); Bosoboso; Rizal Province, *Ramos,* (*1191*), (*1207*), (*4619*), (*4623*); Rizal Province, *Ramos,* (*1867*); Bagac, Bataan Province, *Curran,* (*6494*); Lamao Forest Reserve, Bataan Province, (*7389*); Lamao, Bataan Province, *Curran,* (*7542*); Panai, Benguet Province, *Merrill,* (*5004*); Montalban, Rizal Province, *Merrill,* (*5091*); Twin Peaks, Benguet Province, *Elmer 6354.* Negros: Gimagaan River, *Copeland 21.* Mindoro: Bongabong River, *Whitford 1443.* Mindanao: Davao, *Copeland 490;* Camp Keithley, Lake Lanao, *Clemens g, m,* and one other collection.

DAEDALEA HOBSONI Berk. Jour. Linn. Soc. Bot. **13**: 165. 1873.

Balabac: *Mangubat,* (*510*). Luzon: Bagac, Bataan Province, *Curran,* (*6493*); Montalban, Rizal Province, *Merrill,* (*5084*); Moron, Bataan Province, *Curran,* (*6492*); Lamao, Bataan Province, *Copeland 186, 187, 188*; Bauang, Union Province, *Elmer 5745*; Santa Maria Mavitac, Laguna Province, *Curran,* (*8920*), (*8931*); Cavite Province, *Curran & Merritt,* (*8941*); Zambales Province, *Curran,* (*7027*); Mt. Mariveles, Bataan Province, *Merrill,* (*3696*); Rizal Province, *Foxworthy,* (*119*), *Ramos,* (*1868*); Antipolo, Rizal Province, *Curran,* (*7041*); Manila, *Copeland 42.* Mindoro: Bongabong River, *Whitford 1419.* Mindanao: Zamboanga, *Whitford & Hutchinson,* (*9225*); Camp Keithley, Lake Lanao, *Clemens "O," q.*

Daedalea isabellina Murrill, sp. nov.

Pileus thin, corky, slightly flexible, sessile, dimidiate, applanate above, convex below, thickest behind, 5 × 9 × 0.5–1.5 cm.; surface glabrous, faintly multizonate in front, rough and warty behind, somewhat radiate-rugose, isabelline; margin thin, un-

dulate, subconcolorous: context homogeneous, corky, isabelline, 1–2 mm. thick; hymenium very irregular, porose-daedaleoid behind and lamellate nearly to the margin, where the furrows are forked or additional ones inserted and the edges are thick and close; furrows mostly radial, thin-walled, 1–1.5 mm. wide, 1.3 cm. deep behind, becoming gradually shallower towards the margin, edges entire or undulate, some of them splitting into broad, flat plates with sharply toothed lower margins: spores ovoid, smooth, hyaline, copious, 5–6 × 3–4 μ; hyphae slightly yellowish, 3–4 μ; cystidia none.

Type collected on dead wood at Sablan, Benguet Province, Luzon, April, 1904, by A. D. E. Elmer, *6186*.

Daedalea subconfragosa Murrill, sp. nov.

Pileus sessile, reniform, thin, flexible, conchate, 6 × 11 × 0.3 cm.; surface glabrous, faintly multizonate, pale wood-color; margin acute, fertile, concolorous, entire or undulate: context ochraceous, punky, less than 1 mm. thick; tubes pale wood-color within and without, 2–3 mm. long, tough, mouths much elongated radially, variable in size, 1–6 × 0.5–1 mm., edges thin, undulate or irregularly toothed: spores ellipsoidal, smooth, hyaline, 5–6 × 3–4 μ; hyphae hyaline, 3–4 μ; cystidia none.

Type collected on dead wood in Rizal Province, Luzon, January, 1906, by F. W. Foxworthy, (*22*).

GLOEOPHYLLUM EDULE Murrill, Bull. Torrey Club **34**: 480. 1907.

Luzon: Baguio, Benguet Province, *Elmer*, *Merrill*, (*5000*); Trinidad, Benguet Province, *Elmer 5942*; Zambales Province, *Curran*, (*7019*).

Gloeophyllum nigrozonatum Murrill, sp. nov.

Pileus rigid, subtriangular, narrower behind, sessile, convex above, plane below, 7 × 6 × 1–2 cm.; surface glabrous, nearly smooth, cinereous behind, isabelline in front, with a broad black zone one third the distance from the point of attachment and two or three indistinct brownish zones near the margin, which is thick, rounded, sterile, faintly tomentose, subentire, isabelline or slightly avellaneous: context ferruginous, corky, homogeneous, 5 mm. thick; tubes 1 mm. long behind and at the center, avellaneous, with fulvous dissepiments, mouths ferruginous to cinereous-fuscous, very uneven and irregular in size and shape, daedaleoid and 1–2 × 2–5 mm. behind, with irpiciform edges, poroid and 1 mm. or less at the margin, with edges entire: spores ovoid, smooth, hyaline, scanty, 5 × 3.5 μ; hyphae ferruginous, 3 μ; cystidia none.

Type collected on dead wood near Baguio, Benguet Province, Luzon, March, 1904, by A. D. E. Elmer, *5941*.

GLOEOPHYLLUM STRIATUM (Sw.) Murrill, Bull. Torrey Club **32**: 370. 1905.

Mindanao: Davao, *Copeland D, 525*. Negros: Gimagaan River, *Copeland*.

Lenzites Clemensiae Murrill, sp. nov.

Pileus flabelliform, applanate above, convex below, very slightly flexible, tapering to a very small point of attachment behind, 6 × 7 × 1–1.5 cm.; surface marked with a few broad concentric furrows, minutely reticulated, pure white and regularly radiate-grooved on the marginal band 1.5 cm. broad, grayish-discolored and almost devoid of reticulations and grooves behind; margin subentire, very thick, the context projecting so as to form a very slight edge above the rounded ends of the gills: context milk-white, 1 mm. thick; furrows very deep, reaching 1 cm. or more, most of them forked once, 2 mm. broad, dissepiments entire, obtuse, firm, slightly cremeous.

Type collected on dead wood at Camp Keithley, Lake Lanao, Mindanao, September, 1907, by Mary S. Clemens, *cc*.

Lenzites submurina Murrill, sp. nov.

Pileus thin, tough, slightly flexible, dimidiate, sessile, applanate above and below, 5 × 9 × 1 cm.; surface glabrous, narrowly sulcate and avellaneous-isabelline in front, broadly sulcate and murinous behind; margin thin, undulate: context white, very distinct in color from the isabelline dissepiments, very thin at the margin, increasing to 3 mm. thick behind; furrows lamellate, 1 mm. wide, reaching 5 mm. in depth, edges entire or slightly undulate, not splitting with age.

Type collected on dead wood at Camp Keithley, Lake Lanao, Mindanao, September–October, 1907, by Mary S. Clemens, *aj*.

NEW YORK BOTANICAL GARDEN.

INDEX TO AMERICAN BOTANICAL LITERATURE

(1908)

The aim of this Index is to include all current botanical literature written by Americans, published in America, or based upon American material; the word America being used in its broadest sense.

Reviews, and papers which relate exclusively to forestry, agriculture, horticulture, manufactured products of vegetable origin, or laboratory methods are not included, and no attempt is made to index the literature of bacteriology. An occasional exception is made in favor of some paper appearing in an American periodical which is devoted wholly to botany. Reprints are not mentioned unless they differ from the original in some important particular. If users of the Index will call the attention of the editor to errors or omissions, their kindness will be appreciated.

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Bacon, A. E. Prof. Alphonso Wood. Bull. Vermont Bot. Club **3**: 21–26. Ap 1908.

Bailey, W. W. A forgotten botanical garden. Am. Bot. **14**: 41–43. [Jl] 1908.

Benson, M. On the contents of the pollen chamber of a specimen of *Lagenostoma ovoides*. Bot. Gaz. **45**: 409–412. *f. 1, 2.* 27 Je 1908.

Børgesen, F. The *Dasycladaceae* of the Danish West Indies. Bot. Tidsskr. **28**: 271–283. *f. 1–9.* 22 My 1908.

Bourn, A. The Botrychiums of Dorset, Vermont. Bull. Vermont Bot. Club **3**: 17. Ap 1908.

Britton, E. G. The genus *Zygodon* in North America. Bryologist **11**: 61–66. Jl 1908. [Illust.]

Britton, N. L. Botanical exploration in Jamaica. Jour. N. Y. Bot. Gard. **9**: 81–90. My 1908.

Britton, N. L. The generic name *Bucida*. Bull. Torrey Club **35**: 303, 304. *f. 1.* 1 Jl 1908.

Burlingham, G. S. A study of the *Lactariae* of the United States. Mem. Torrey Club **14**: 1–109. *f. 1–15.* 26 My 1908.

Campbell, D. H. The prothallium of *Kaulfussia* and *Gleichenia*. Ann. Jard. Bot. Buitenzorg II. **7**: 69–102. *pl. 7–14.* Je 1908.

Clute, W. N. A remarkable change of color in *Trillium*. Am. Bot. **14**: 33–35. [Jl] 1908. [Illust.]

[Coker, W. C.] Chapel Hill ferns and their allies. Jour. Elisha Mitchell Soc. **23**: 134–136. [Je] 1908.

Cook, M. T. The hypertrophied fruit of *Bucida Buceras*. Bull. Torrey Club **35**: 305, 306. *f. 1, 2.* 1 Jl 1908.

Coulter, J. M. Relation of megaspores to embyro-sacs in angiosperms. Bot. Gaz. **45**: 361–366. 27 Je 1908.

Crawford, A. C. Notes on "physiological resting." Am. Jour. Pharm. **80**: 321–335. Jl 1908.

Dobbin, F. By the pondside. Am. Bot. **14**: 38–40. [Jl] 1908.

Dorety, H. A. The embryo of *Ceratozamia*: a physiological study. Bot. Gaz. **45**: 412–416. *f. 1–7.* 27 Je 1908.

Dutton, D. L. Some rare plants on Mount Horrid. Bull. Vermont Bot. Club **3**: 38, 39. Ap 1908.

Edgerton, C. W. The physiology and development of some anthracnoses. Bot. Gaz. **45**: 367–408. *pl. 14 + f. 1–17.* Je 1908.

Edson, H. A. Soil reaction in relation to flora. Bull. Vermont Bot. Club **3**: 34–36. Ap 1908.

Eggleston, W. W. A trip to Mount Mitchell. Bull. Vermont Bot. Club **3**: 40–42. Ap 1908.

Evans, A. W. The synonymy of three American *Hepaticae*. Bryologist **11**: 67–70. Jl 1908.

Fletcher, J. Two newly introduced European plants. Ottawa Nat. **22**: 80, 81. 10 Jl 1908.

French, G. T. Observations on *Medicago lupulina* L. Science II. **28**: 127. 24 Jl 1908.

Gager, C. S. Teratological notes. Torreya **8**: 132–137. 30 Je 1908. [Illust.]

Gates, F. C. Comparison of the seasons at Chicago and Urbana, Illinois. Am. Bot. **14**: 45, 46. [Jl] 1908.

Gleason, H. A. Resting plants. Am. Bot. **14**: 35–38. [Jl] 1908.

Gürke, M. Die Gattung *Peireskiopsis* Britt. et Rose. (*Opuntia* subgen. *Peireskiopuntia* Web.) Monats. Kakteenk. **18**: 81–84. 15 Je 1908.

Gürke, M. Neue Kakteen-Arten aus Brasilien. Monats. Kakteenk. **18**: 84–89. [Illust.] 15 Je 1908.

New species in *Cereus, Cephalocereus* [2] and *Peireskia*.

Gürke, M. *Melocactus Maxonii* (Rose) Gürke. Monats. Kakteenk. 18: 93. 15 Je 1908.

Harshberger, J. W. The comparative leaf structure of the sand dune plants of Bermuda. Proc. Am. Phil. Soc. 47: 97–109. *pl. 1–3.*

Hazen, T. E. *Oxalis Brittoniae* at Pownal. Bull. Vermont Bot. Club 3: 17, 18. Ap 1908.

Hemsley, [W. B.] *Philadelphus madrensis.* Kew Bull. Misc. Inf. 1908: 251.
New species from Mexico.

Hitchcock, A. S. Types of American grasses: a study of the American species of grasses described by Linnaeus, Gronovius, Sloane, Swartz, and Michaux. Contr. U. S. Nat. Herb. 12: 113–158. 18 Je 1908.
Brachiaria Meziana sp. nov., described in a footnote.

Jorns, M. J. Observations on change of sex in *Carica Papaya.* Science II. 28: 125, 126. 24 Jl 1908.

Johnston, J. R. A collection of plants from the vicinity of La Guaira, Venezuela. Contr. U. S. Nat. Herb. 12: 105–111. 20 My 1908.
Includes description of five new species.

Kennedy, P. B. Further notes regarding *Dicoria.* Muhlenbergia 4: 38–40. 3 Je 1908.

Matton, W. R. The sprouting of short-leaf pine in the Arkansas National Forest. Forestry Quart. 6: 158, 159. Je 1908.

McClendon, J. F. On xerophytic adaptations of leaf structures in yuccas, agaves, and nolinas. Am. Nat. 42: 308–316. *f. 1–25.* 7 Je 1908.

Mildbraed, J. *Stylidiaceae.* Das Pflanzenreich 4^{278}: 1–98. *f. 1–26.* 26 My 1908.
Includes notes on *Donatia* from Chili.

Moore, G. T. The most primitive living representative of the ancestors of the plant kingdom. Proc. Am. Phil. Soc. 47: 91–96. 1908.

Murrill, W. A. The chestnut canker. Torreya 8: 111, 112. 19 My 1908.

Murrill, W. A. A key to the white and bright-colored sessile Polyporeae of temperate North America—III. Torreya 8: 130–132. 30 Je 1908.

Murrill, W. A. Leaf blight of the plane-tree. Jour. N. Y. Bot. Gard. 9: 105–107. *pl. 45 + f. 13.* Je 1908.

Nash, G. V. The lace-bark tree. Jour. N. Y. Bot. Gard. **9**: 116–118. *f. 14–16.* Je 1908.

Nash, G. V. Two new grasses from the West Indies. Bull. Torrey Club **35**: 301, 302. 1 Jl 1908.
Panicum Grisebachii and *Pharus parvifolius* spp. nov.

Osterhout, W. J. V. The value of sodium to plants by reason of its protective action. Univ. California Pub. Bot. **3**: 331–337. 26 Je 1908.

Osterhout, W. J. V. On the effects of certain poisonous gases on plants. Univ. California Pub. Bot. **3**: 339, 340. 26 Je 1908.

Paris, E. G. Note sur le *Hookeria papillata* Sull. (nec Mont. !). Rev. Bryol. **35**: 61. 1908.

Parish, S. B. A problem of plant distribution. Muhlenbergia **4**: 42, 43. 3 Je 1908.

Patouillard, N. Champignons noveaux ou peu connus. Bull. Soc. Myc. **24**: 1–12. *f. 1–3.* 20 Mr 1908.
Includes 15 American species described as new.

Penhallow, D. P. Some fossil plants from the middle Devonian of Milwaukee, Wisconsin. Bull. Wisconsin Nat. Hist. Soc. **6**: 8–12. *pl. 1, 2.* Ap 1908.
Nematophycus milwaukeensis and *Fucus bertheletensis* spp. nov.

Penhallow, D. P. Report on a collection of fossil woods from the Cretaceous of Alberta. Ottawa Nat. **22**: 82–85. *f. 1–6.* 10 Je 1908.
Picea albertensis and *Sequoia albertensis* spp. nov.

Pilger, R. Eine neue Gattung der Aizoaceae. Bot. Jahrb. **40**: 396, 397. 24 Ja 1908. [Illust.]
Glischrothamnus Ulei gen. et sp. nov. from Brazil.

Pittier de Fábrega, H. *Tonduzia*, a new genus of *Apocynaceae* from Central America. Contr. U. S. Nat. Herb. **12**: 103, 104. *pl. 9* + *f. 5, 6.* 20 My 1908.
T. parvifolia Pittier sp. nov. and *T. stenophylla* (Donnell Smith) Pittier, comb. nov.

Pittier de Fábrega, H. The *Lecythidaceae* of Costa Rica. Contr. U. S. Nat. Herb. **12**: 95–101. *pl. 1–8.* 20 My 1908.
Includes several new species.

Quehl, L. *Mamillaria difficilis* Quehl n. sp. Monats. Kakteenk. **18**: 107. 15 Jl 1908. [Illust.]
From Mexico.

Quehl, L. *Mamillaria Eichlamii* Quehl n. sp. Monats. Kakteenk. **18**: 65, 66. 15 My 1908.
From Guatemala.

Quehl, L. *Mamillaria Joossensiana* Quehl n. sp. Monats. Kakteenk. **18**: 95. 15 Je 1908.
From Mexico.

Reynolds, E. S. Plant pathology in its relation to other sciences. Science II. **27**: 937–940. 19 Je 1908.

Robinson, B. L. Further notes on the vascular plants of the northeastern United States. Rhodora **10**: 64–67. 16 My 1908.

[Rolfe, R. A.] *Epidendrum pentotis.* Orchid Rev. **16**: 189. Je 1908.

Rothrock, J. T. Hackberry, sugar-berry (*Celtis occidentalis* L.). Forest Leaves **11**: 136, 137. Je 1908. [Illust.]

Ruggles, B. P. Hartland sedges. Bull. Vermont Bot. Club **3**: 43–45. Ap 1908.

Rusby, H. H. Adulterants in foods and drugs and their detection. Jour. N. Y. Bot. Gard. **9**: 107–115. Je 1908.

Saunders, C. F. Rediscovery of *Cheilanthes Parishii.* Fern Bull. **16**: 35: [Je] 1908.

Seaton, S. The development of the embryo-sac of *Nymphaea advena.* Bull. Torrey Club **35**: 283–290. *pl. 18, 19.* 1 Jl 1908.

Seaver, F. J. Color variation in some of the fungi. Bull. Torrey Club **35**: 307–314. 1 Jl 1908.

Servettaz, C. Note préliminaire sur la systématique des Elaeagnacées. Bull. Herb. Boiss. II. **8**: 381–394. 30 My 1908.

Setchell, W. A. Notes on *Lycoperdon sculptum* Harkness. Bull. Torrey Club **35**: 291–296. *pl. 20.* 1 Jl 1908.

Setchell, W. A. Critical notes on *Laminariaceae.* Nuov. Notar. **19**: 90–101. Ap 1908.

Sheldon, J. L. Another leaf-spot fungus of the apple. Torreya **8**: 139–141. 30 Je 1908.
Illosporium malifoliorum sp. nov.

Shepard, J. Solar prints of plants. Fern Bull. **16**: 39–42. [Je] 1908. [Illust.]

Smith, R. W. Endosperm of *Pontederiaceae.* Bot. Gaz. **45**: 338, 339. *f. 1–4.* 15 My 1908.

Spillman, W. J. An interpretation of elementary species. Science II. **27**: 896–898. 5 Je 1908.

Sprague, [T. A.]. *Begonia dichroa.* Kew Bull. Misc. Inf. **1908**: 251, 252. 1908.
New species from Brazil.

Sprague, [T. A.]. & Hutchinson, [R. R.]. *Sanchesia parvibracteata.* Kew Bull. Misc. Inf. **1908**: 253, 254. 1908.
New species from Brazil.

Sprague, [T. A.]. *Asterophorum eburneum.* Kew Bull. Misc. Inf. **1908**: 249, 250.
New genus and species from Ecuador.

Sterling, C. M. Histology of *Hyoscyamus muticus.* Am. Jour. Pharm. **80**: 361–368. *f. 1–5.* Au 1908.

Sydow, H. & P. Über eine Anzahl aus der Gattung *Uromyces* auszuschliessender resp. unrichtig beschriebener Arten. Ann. Myc. **6**: 135–143. 31 My 1908.

Theissen, F. Über die Berechtigung der Gattung *Diatrypeopsis* Speg. Ann. Myc. **6**: 91–94. 31 My 1908.

Tilden, J. E. Notes on a collection of algae from Guatemala. Proc. Biol. Soc. Washington **21**: 153–156. 9 Je 1908.

Trundy, A. H. Fairy rings of *Lycopodium sabinaefolium* in Maine. Fern Bull. **15**: 70, 71. [Je] 1908.

Ule, E. Über eine neue Gattung der Capparidaceen mit Klettervorrichtungen. Ber. Deuts. Bot. Gesells. **26a**: 220–224. 23 Ap 1908.
Haptocarpum bahiense gen. et sp. nov. from Brazil.

Urban, I. Nova genera et species — III. Symb. Antill. **5**: 353–555. 20 My 1908.
Includes many new West Indian species.

Weingart, W. *Cereus flagelliformis* var. *minor* Salm-Dyck. Monats. Kakteenk. **18**: 49–52. 15 Ap 1908.

White, D. Some problems of the formation of coal. Economic Geology **3**: 292–318. [Jl] 1908.

Wilson, P. Notes on *Rutaceae.* Torreya **8**: 138, 139. 30 Je 1908.
Xanthoxylum Nashii Wilson, sp. nov. from Haïti.

Yamanouchi, S. Apogamy in *Nephrodium.* Bot. Gaz. **45**: 289–318. *pl. 9, 10 + f. 1–3.* 15 My 1908.

Zahlbruckner, A. New North American lichens. Bull. Torrey Club **35**: 297–300. 1 Jl 1908.
Six species and one variety from Arizona described as new.

Zahlbruckner, A. Beiträge zur Flechtenflora Brasiliens. Bull. Herb. Boiss. II. **8**: 459–468. 30 Je 1908.